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WHO CHRONICLE

VOL. 13, No. 4 - APRIL 1959

The 1957-1958 influenza pandemic

Tuberculosis : a period of transition

Health work in Europe

Poisoning as a cause of death

Hospital laboratory services

Auxiliary dental personnel

Hypertension and coronary heart disease

WORLD HEALTH ORGANIZATION
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The World Health Organization (WHO) is one of the specialized agencies of the United Nations. Through this organization, which came into being in 1948, the public health and medical professions of more than 80 countries exchange their knowledge and experience, and collaborate in an effort to achieve the highest possible level of health throughout the world. WHO is not concerned with problems which individual countries or territories can solve with their own resources. It deals, rather, with problems which can only be satisfactorily solved through the co-operation of all, or certain groups of, countries—the eradication of diseases such as malaria, the control of cholera, plague, yellow fever, smallpox and rickettsiosis. Progress towards better health throughout the world also demands international co-operation in many other activities : for example, setting up standards for biological substances, for insecticides and insecticide spraying equipment ; compiling an international pharmacopoeia ; drawing up international sanitary regulations ; revising the international lists of diseases and causes of death ; assembling and disseminating epidemiological information ; recommending non-proprietary names for drugs ; and promoting the exchange of scientific knowledge. In many parts of the world, there is need for improvement in maternal and child health, nutrition, nursing, mental health, environmental sanitation, public health administration, professional education and training, and health education of the public. Thus a very large share of the Organization's resources is devoted to giving assistance and advice in these fields to countries and territories whose health services are in an early state of development and which are therefore weak points in the common front against disease.

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LESSONS OF THE 1957-1958 INFLUENZA PANDEMIC

The 1957-1958 influenza pandemic was followed with close interest by influenza centres, virological institutes and health services throughout the world. Not only were public health authorities anxious to avoid a repetition of the ravages of the 1918 influenza pandemic, but it was also realized that the new pandemic gave virologists an excellent opportunity of gaining further knowledge which might eventually lead to the control of the disease. Through its world-wide network of epidemiological information services and its contacts with national health institutions, WHO was in a unique position to collect, analyse and disseminate the results of epidemiological, virological, serological and immunological studies carried out in various parts of the world. A collection of these studies from various European countries, as well as from India, Japan and French Equatorial Africa, has just appeared in the Bulletin of the World Health Organization.[1] *The article that follows is based on this collection and deals with certain findings that throw a new light on the behaviour of influenza viruses, and also with the results of recent vaccination experiments.*

One way in which the influenza pandemic of 1957-1958 differed from that of 1918 was that almost all the countries it attacked had co-ordinated epidemiological services and health statistics services for recording cases. A good number of these countries had, moreover, virological institutes working in liaison with reference centres, such as the World Influenza Centre, London, and the International Influenza Center for the Americas, Montgomery, Ala., both established under the auspices of WHO.

The pandemic probably started in China at the beginning of the spring of 1957, and spread for several weeks without being notified to epidemiological stations, since the WHO epidemiological information services do not cover continental China. Its arrival in Singapore, notified on 4 May, served as a warning to health services all over the world. Its progress was noted, tracked down and sometimes forecast, so that preparations for its arrival could be made in advance. Viruses were isolated in national laboratories and identified on the spot or sent to the World Influenza Centre for accurate typing. The antigenicity of the strains was studied, vaccines were prepared, population groups were vaccinated with different types of vaccine, and the effectiveness of the latter was evaluated by various methods. For a long time, certain domestic animals had been suspected of acting as reservoirs of influenza virus. In 1957-1958 veterinary services were asked by WHO to look for antibodies and viruses in pigs and horses, for it is possible that a domestic animal, probably in Eastern Asia, harbours the virus, which since the eighteenth century has spread over the world several times in vast pandemics.

Epidemiology

In an age when the spread of infection is greatly facilitated by extensive intercontinental travel and speedy transport, it is difficult to chart, from country to country, the advance of a disease such as influenza, whose symptoms, though mild, may be confused with those of other complaints.

From its initial Asiatic foci the influenza pandemic spread like wildfire, and it was hopeless to try to stop it by the usual epidemic control methods. For example, despite a five-day quarantine imposed on the S.S. *Rajula* lying off Madras with 44 active

[1] *Bull. Wld Hlth Org.*, 1959, **20**, 183-508. For the list of contents, see the advertising section at the end of this number of the Chronicle.

influenza cases and about 250 convalescents on board, the disease spread to the State of Madras and the neighbouring provinces once the ship's 1600 passengers had disembarked. Even if the quarantine measures taken at Madras had been successful, they would not have prevented the spread of influenza to India, since, in the same week, other cases were reported at Calcutta and Bombay, which were probably due to infection by travellers arriving by sea or air. In six weeks, influenza had invaded the whole of India.

What was the origin of the cases reported in the last three weeks of May at Tashkent, Stalinabad, Omsk and Novosibirsk ? Travellers coming from Japan, China, Hong Kong or Singapore ? It is impossible to say with certainty. From Syria and Iran, the disease entered Turkey, which has extensive traffic and trade links with these adjacent countries. From the USSR, the pandemic spread to Czechoslovakia and the first cases in Poland appeared in small foci at the Czechoslovak frontier.

In the USSR and in Japan the epidemic occurred in two successive waves: in the USSR, in May-June and then in October; in Japan, in June and then in November-December. Since influenza is not a summer disease it probably remained dormant after the initial outbreak until the first cold days of autumn and the beginning of the school year.

Almost everywhere morbidity was particularly high in groups of young adults and children in schools, camps and factories, sometimes reaching 40-60%. In Poland—a surprising and still unexplained fact—the morbidity figures were higher in the industrial than in the mining areas, where the recorded incidence was roughly the same as in the agricultural regions.

Several authors have discussed the functioning and reliability of the reporting systems used during the pandemic. These authors cite data showing that, even under the most favourable conditions, the number of influenza cases reported still fell short of the real figure. For example, the notification system at Łódź (Poland), a textile-industry centre, is considered a model one. It is based on daily telephone reports received by the municipal public health laboratory from all institutions connected with the public health service—factory clinics, out-patient departments, child clinics—and from private practitioners. However, this careful and thorough organization revealed only part of the real morbidity, as was shown by household surveys carried out in several districts of the town. Mild cases, particularly among children and unemployed adults, tended to escape notification.

Zhdanov mentions that, according to door-to-door morbidity surveys among large population groups in certain towns of the USSR, the actual number of cases exceeded the figures registered by medical establishments by 16-50% (average 31%). It is believed that in the USSR the epidemic probably affected 30% of the whole population.

In Japan, a questionnaire was distributed among the staff of the health services and their families, so as to determine the morbidity rate in this population group. When the replies—based on clinical symptoms—were checked several weeks later by means of serological tests, 40% of cases diagnosed as influenza were found to be serologically negative, and according to Fukumi, the haemagglutination-inhibition (HI) test seemed to indicate that they were not influenza cases at all.

Although approximate, the notified figures are nevertheless instructive. In India it is estimated that the morbidity varied, according to the region, from 4000 to 28 000 per million inhabitants, the latter figure referring to Bombay. Variations in the case-fatality rate bring out differences in the behaviour of the disease in different parts of the country—thus, for example, there were areas with high case-fatality rates next door to areas where the corresponding rates were low. In West Bengal, which contains 7.2% of the population of India, notified cases accounted for only 6.4% of the total morbidity in the country, but the number of deaths represented 40.5% of the total mortality. In the instructive tables appearing in the study by Menon there is a striking comparison

between the mortality figures for the 1918 and the 1957 pandemics: in the Province of Assam, for example, 9 fatal cases were recorded in 1957 as against 111 340 in 1918, and in Bombay, 315 deaths in 1957 as against 1 059 497 in 1918.

Clinical features

It is clear—as the above figures indicate—that the pandemic was mild. In India, where the morbidity was estimated at 12 000 per million inhabitants, only 242 deaths were recorded per million cases. However, Menon points out that this apparently harmless pandemic was characterized in India by a number of cases with nervous symptoms.

Zhdanov also mentions " that the clinical picture caused by A2 virus in children is characterized by an intoxication of the nervous system, having a serious effect on the general state of health, with a high temperature, vomiting, and frequent liquid stools ". " In a few cases," he adds, " an encephalitic syndrome was observed, accompanied by clonic and tonic cramps, delirium and even loss of consciousness. " According to the same author, pneumonia was the cause of 95% of deaths among children and adults. This was not a pneumonia due to a secondary streptococcal, staphylococcal or pneumococcal infection as in previous years, but an influenzal, haemorrhagic pneumonia. In addition, signs of influenzal toxicosis—acute cerebral oedema and haemorrhagic foci in the internal organs—were noted.

Virology

It is known that the 1957 influenza epidemic was due to a so-called " Asian " virus, designated A2, differing in its biological and antigenic properties from those which had caused previous epidemics. While having certain antigens in common with the A and A1 viruses, as was shown by the complement-fixation test, it differed from them in its haemagglutinating antigenic components. The virus gave very low haemagglutination titres with poultry and guinea-pig red cells. Ether treatment, which decreases the haemagglutination titre of most of the A1 viruses with the red cells of poultry and guinea-pigs, actually increased this titre, in the case of certain A2 virus strains. Unlike any previously known human influenza virus, the A2 virus agglutinated the red cells of the horse, calf and pig, resembling in this respect several viruses isolated from animals (A-equi virus isolated from the horse in Czechoslovakia, the virus of avian plague, and that of duck influenza).

Several authors have reported differences in the serological behaviour of the various strains within the A2 group. Zhdanov & Ritova found, among 42 viruses isolated during the epidemic in the USSR, " avid " strains which react not only with homologous sera but also with all A-group sera, and " non-avid " strains which react only with A2 sera. The haemagglutination of the avid strains is inhibited by sera from convalescents and vaccinated animals; that of the non-avid strains is not inhibited by these sera, or only to a very small extent. The complement-fixation test does not show any difference between avid and non-avid strains. It was thought at first that these two serological forms might represent two consecutive stages in the development of the A2 virus, the first form having retained a certain affinity for the older strains, but losing it in the course of the epidemic. Experience, however, did not bear this out. Avid and non-avid strains were isolated at all stages of the pandemic, often at the same time, in the same place and from the same human group. The strains retained their characteristics during numerous sub-cultures; it was only after twenty mouse passages that a transformation of avid strains into non-avid strains was noted.

In strains isolated in Japan, Fukumi found P-phase viruses which were readily inhibited by convalescent serum, while others in the Q phase were scarcely inhibited by it. The first had very satisfactory immunizing properties but the second were hardly suitable for the preparation of an effective vaccine.

Vaccination

The ease with which the influenza pandemic spread has been explained by the inability

of the antibodies left by all the previous epidemics to oppose the new virus. The question arose, however, whether the antibodies formed in response to the A and A1 viruses in preceding epidemics had not left some useful degree of immunity behind them, even in the event of infection by a virus containing other antigens.

This question is discussed in two of the articles reviewed here. Slepushkin reports that in a factory near Moscow where there had been an outbreak of A1 influenza in the spring of 1957, several persons who fell ill then also had A2 influenza in the summer. However, during the second of these outbreaks, the sickness-rate for those who had been affected in the spring was only half that for those who had not. The protection conferred by the attack of A1 virus was of short duration, however: the percentage of subjects " protected " by A1 antibodies had considerably fallen by the time of the autumn A2 influenza offensive.

Zhdanov observed that among children the course of influenza has two stages: during the first, the virus multiplies in the upper respiratory tract; in the second it reaches the lungs, probably through the blood. However, this second stage was observed only rarely among adults because the latter probably enjoy " partial immunity to the A2 virus acquired as a result of previous illnesses caused by other A-group viruses ". Virus which penetrates into the blood is stopped there by neutralizing or complement-fixing antibody, while the A, A1 and A2 viruses give cross-reactions in the corresponding tests. The same author wonders whether the trust placed in the haemagglutination-inhibition test for assessing the immunity of the population is not excessive.

As soon as the epidemic appeared the question of vaccination arose. This was complicated by the fact that the A2 virus was antigenically different from its predecessors so that the virus strains used in previous years in various countries would very probably be more or less ineffective. Experience over the last twenty years has shown, in fact, that if it is to exert a protective action, the vaccine must be prepared with a virus strain as close as possible to the one causing the epidemic.

While work was being done to isolate the viruses as well as to study them serologically and prepare vaccines—whose low antigenicity as evaluated by the HI test called for considerable quantities of egg culture (up to one egg per dose)—the epidemic continued to advance. Of course, the aim of vaccination was not to stop the epidemic, which would have been a vain hope, but to prevent the disorganization of the public services by excessive absenteeism and to protect those persons responsible for essential social and economic activities.

In several countries the main epidemic wave was receding when the vaccine became available in adequate amounts, but in others where there was a second outbreak of influenza in the autumn or which were affected only in the closing months of 1957, certain population groups were vaccinated and the results were evaluated, if not always with complete statistical accuracy, at least reliably enough to give an adequate qualitative picture. Several of the Bulletin articles analysed here deal with the effects of vaccination.

Iceland

Vaccination commenced in September and was reserved for debilitated persons or those in poor health who would probably have had no natural resistance to the disease. A certain number of these persons were vaccinated, while the other members of their households served as controls. The comparisons recognized as valid covered 92 households with 433 persons, 118 of whom were vaccinated. Twenty-two cases of influenza were noted among the 118 persons vaccinated and 219 among the 315 persons not vaccinated. A comparison of all vaccinated and unvaccinated persons of both sexes aged from 20 to 59 years shows that vaccination completely protected 67% of the group.

Japan

Vaccination was carried out in military camps, factories, schools and hospitals. In preparing vaccines with three different strains it was noticed that two of them were in the

Q phase—one in the extreme stage of that phase—and that they had only feeble immunizing power but multiplied very well in the egg. The other was in the P phase and although developing more slowly in the egg had a high haemagglutinating power and was clearly inhibited by convalescent serum. Vaccine prepared with this strain gave better results than the others. Administration of two doses instead of a single dose appears to have been more effective.

The two consecutive waves of influenza in Japan made it possible to assess the effects of vaccination carried out at the end of the first wave, and to evaluate the haemagglutination-inhibiting antibody titre serving as an indication of resistance to reinfection. The antibody levels of 18 confirmed cases of reinfection were mostly 1 : 16 or 1 : 32—and, in a few cases, 1 : 64—before reinfection. In another group of 14 patients believed to have been reinfected, acute serum titres of 1 : 128 or even 1 : 256 do not appear to have had a preventive effect. Generally speaking, however, it may be safe to say that those who have haemagglutination-inhibiting antibody levels of more than 1 : 64 are very largely protected from reinfection.

Poland

In this country vaccination has been carried out during each annual epidemic since 1953. In their article, Przesmycki et al. describe the results obtained until the beginning of 1957, i.e., during virus A1 or B epidemics. The Polish vaccine differs from those used in most countries in that it is polyvalent and is administered intranasally. Several virus strains, generally five, belonging to groups A, A1 and B enter into the composition of the vaccine. Thanks to this variety there is a good chance of the vaccine's containing at least some antigens in common with the viruses responsible for an epidemic. The formalinized and adsorbed vaccine is administered intranasally, reducing the number of secondary reactions to a minimum. Serological examination does not indicate any parallelism between the antigenic potency and protective potency of the vaccine. It is possible that the response to intranasal instillation is partly a local immunity phenomenon which is not accompanied by an increase in the serum antibody level.

Sweden

Preparation of the vaccine began in May 1957 with an A2/Singapore/57 strain received from the World Influenza Centre, at a time when the pandemic had not yet reached Sweden. Plans were drawn up with the aim of elucidating various points, such as the size of the minimum effective dose, the relationship between the antibody response and the protective effect of the vaccine, the respective advantages of a single dose and of two doses, and those of the aqueous vaccine and of vaccine adsorbed on aluminium phosphate. The first vaccinations of soldiers and civilians were carried out in August, before the arrival of the epidemic. Serological analysis before and after vaccination showed that the titre of sera without antibody was always less than 1 : 22 and that anything above this level indicated a response to vaccination.

The vaccine was injected in doses of as much as 1500 haemagglutinating units (HU) (10-40 of these units=1 CCA unit [2]). A second injection had an evident booster effect and it may be concluded that two doses of vaccine slightly above 1500 HU injected at an interval of two weeks ensure an antibody response in almost all those vaccinated. In this series of tests also there was no parallelism between the level of the serological response and the degree of protection given. A weak HI response does not necessarily mean a poor protective effect, and *vice versa*. The antibody response and the protective effect are variables depending on different factors (intensity and duration of contagion, possible variation in the virulence of the virus, time elapsing between vaccination and exposure). It is thus difficult to speak of the minimum effective dose of an influenza vaccine, since there is certainly more than one criterion of effectiveness. The authors of the article on vaccination in Sweden believe that it is not always suitable

[2] Chicken-cell agglutinating unit

to express the potency of a vaccine in haemagglutinating units and that in the case of vaccines prepared from strains belonging to the same antigenic subgroup, the total nitrogen or protein nitrogen content may be a better indicator of relative immunizing power.

USSR

Prophylactic tests with a live vaccine have been carried on since 1954. In 1957, large groups were vaccinated with A1 virus strains cultured on human lung tissue and administered by intranasal spraying These strains conferred protection against reinfection on 60-70% of those vaccinated. The percentage of unprotected persons can be gradually decreased by re-vaccinations. In May 1957, a vaccine was prepared using a pool of A2 strains which had undergone not more than 5-7 egg passages. Passage in human tissue was omitted to save time. The optimum dose—taking into account the general reactions to the vaccine—was fixed at 0.05-0.1 ml. Some 3 000 000 persons were vaccinated at the beginning of the epidemic. The effectiveness (ratio between the percentage of cases in vaccinated persons and the percentage in unvaccinated persons) varied, according to the town, from 1.35 to 3.5.

Role of animals in influenza epidemiology

For more than twenty years certain animals have been suspected of playing a part in the epidemiology of influenza. In 1931, an A virus which caused an epizootic of an influenza-like disease was isolated from pigs in the United States; this was later considered to be the prototype of the virus which had caused the 1918 pandemic. Since then, an active search has been made for the virus in pigs, horses and poultry. In 1956, a virus causing a serious equine disease was isolated in Czechoslovakia. It was recognized in 1957 that the Asian (A2) virus had many antigenic properties in common with this equine virus. As soon as the 1957 epidemic began to spread, WHO approached the veterinary services of a large number of countries and asked them to take blood specimens from pigs and horses—if possible, both before and after the epidemic—and examine them for antibodies which might have developed following infection with A2 virus. These serological analyses, summarized by Kaplan and Payne, show that the A2 virus can cause natural infection in horses. Natural infection also occurs among pigs in the United States, Czechoslovakia and Germany, although attempts to infect them experimentally have been unsuccessful. A2 virus was found in pigs in China at the outset of the epidemic; thus the possibility that influenza spreads from Eastern Asia, starting in an animal harbouring the parent strain of influenza virus, cannot be excluded.

Prospects for immunization would indeed be bright if it proved possible to discover the original strain of the viruses responsible for the recent epidemics, and perhaps even for much earlier ones, such as those of 1830 and 1782.

Although many authors have not found any trace of the virus or its antibody among pigs examined in their respective countries, there can be no doubt that these animals play a role in influenza epidemiology. Not only can this fact be no longer ignored, but research must be intensified to define this role more precisely. For the pig, although it is a " reservoir ", is not perhaps the first link in the chain, and it has been suggested that invertebrates might be the carriers of latent virus particles, which, under certain favourable conditions, would become infective for higher animals or even man.

WHO Chronicle 13, 169 (April, 1959)

TUBERCULOSIS : A PERIOD OF TRANSITION

The tuberculosis programme of WHO has as its first objective the elimination of the disease as a public health problem. The article that follows discusses the Organization's work in this field. It is based on an address delivered by Dr Johs. Holm, Chief Medical Officer, Tuberculosis, WHO Headquarters, at the Conference of the Tuberculosis and Health Associations of Greater New York in November 1958.

There seems to be a fairly widespread belief that WHO was established mainly to assist the so-called under-developed countries in improving their health services. While this is undoubtedly one of the Organization's functions, it also deals with matters of concern to highly developed countries. A case in point is the problem of tuberculosis.

Measuring tuberculosis trends

In a number of countries, tuberculosis mortality and morbidity have dropped to such low levels in recent years that the responsible public health authorities have difficulty in planning their future tuberculosis programmes. The countries concerned have all, for many years, had tuberculosis control services, including specialized institutions such as sanatoria and tuberculosis dispensaries. Their problem is to decide whether these institutions and other control efforts should be retained and, if so, for how long. There is a very real risk that, as a result of their natural desire to save money, the authorities will allow their allocations to the tuberculosis programme to follow the downward trend of tuberculosis mortality and morbidity. Such an economy measure might well benefit the tubercle bacilli rather than the public.

Tuberculosis remains a public health problem as long as healthy individuals are at a considerable risk of contracting tuberculous disease; where such a risk exists, the tuberculosis control programme with its specialized institutions must be maintained, and perhaps even strengthened. To be able to ascertain when the risk has been reduced sufficiently for specific control measures to be dropped, it is necessary to have a practical means of measuring the tuberculosis problem in a community.

In many countries, tuberculosis morbidity and mortality rates have so far been used as indicators of tuberculosis trends. The advent of effective antituberculosis chemotherapy, has, however, made mortality figures almost useless for this purpose. Even morbidity rates can be misleading indicators, since their interpretation requires an extensive knowledge of local conditions. Moreover, morbidity figures are practically valueless for international comparisons, since there is no internationally accepted definition of pulmonary tuberculosis.

Prevalence surveys of large samples of the population, selected at random, are a useful and practical means of ascertaining the extent of tuberculosis in countries where the disease has a relatively high prevalence (2-20 cases per 1000 adult population). This type of survey, which it not dependent on the reporting of cases, is also useful for international comparisons, provided standard methods of examination are used. Periodic surveys make it possible to assess the trend of tuberculosis in a country and thus to evaluate the effect of a tuberculosis control programme. WHO has devoted much attention to the development of standard methods for tuberculosis prevalence surveys, and has undertaken such surveys in several countries in Africa. When, as the result of a tuberculosis programme, the prevalence of tuberculosis in a country has been reduced to less than 2 cases

per 1000 adult population, surveys of this type become impracticable, since, in order to obtain reliable estimates, 50 000-100 000 persons would have to be examined in each community. At this stage, the tuberculin test must be employed.

By tuberculin-testing a sample of a few thousand children selected at random from the total child population, the risk of infection existing in a given community can be assessed fairly precisely. When less than 1% of the children are reactors to tuberculin at 14 years of age, then the risk of the contraction by a healthy person of a tuberculous disease is so small that tuberculosis can no longer be considered a public health problem in the community concerned. It is of the greatest importance that the methods used should permit direct international comparisons, and this is one reason why WHO has devoted a great deal of time and effort to the complete standardization of tuberculin-testing.

For example, through an Expert Committee on Biological Standardization, the Organization has established an international standard for tuberculin, which makes it possible to express doses of tuberculin in international units. With UNICEF, it has taken the initiative in arranging for the preparation of a large batch of purified tuberculin (PPD), which has been carefully standardized by the tuberculin-testing of population groups in different parts of the world; this batch is sufficient for 33 000 000 000 tests and should accordingly meet world needs for many years to come. In addition, the WHO Tuberculosis Research Office has found a method of stabilising final dilutions of tuberculin to such an extent that they can be used for at least six months after preparation, provided they are kept cold and protected from light. This method involves the addition of a non-ionic detergent—" Tween 80 "—to the diluent. On the basis of extensive experience in almost all parts of the world, WHO has recommended a standard tuberculin test—the intradermal test with a single low dose—as well as standard methods for the reading of reactions, and the reporting and recording of results.

Reducing the risk of tuberculosis infection

There are two highly effective methods which can be used today to reduce the risk of tuberculosis infection to the point where the disease ceases to be a public health problem. They are BCG vaccination, and the use of antituberculosis drugs, such as isoniazid (INH). These methods supplement one another, and each has its own place in a tuberculosis programme.

As the result of two controlled trials conducted in the United States, doubts have recently been raised about the protective effect of BCG vaccination. It must not be assumed, however, that BCG vaccination is a standard procedure, since a great deal depends on the vaccine used, the method of application and other factors. A vaccination can only be considered as successful if retesting of a sample of the vaccinated subjects shows that a sufficiently high degree of post-vaccination allergy has been induced. From much circumstantial evidence and from a controlled trial carried out by the Medical Research Council of Great Britain, it is known that successful BCG vaccination gives a protection of the order of 80%. Moreover, data collected in a number of countries in all parts of the world have shown that a sufficiently high degree of post-vaccination tuberculin allergy can be achieved by BCG vaccination when a potent vaccine and the proper method of vaccination are used. The controlled trials carried out in the United States would seem principally to confirm the well-known observation that a BCG vaccination which does not produce strong and lasting post-vaccination allergy cannot be expected to confer a high degree of protection, regardless of whether this unsatisfactory result is due to the use of a weak vaccine or incorrect methods of application.

While much is known about the use of antituberculosis drugs in the treatment of infectious cases, and something about their use in the preventive treatment of potentially infectious cases, knowledge of their use in true prophylaxis is scanty. WHO is therefore taking part in a number of study and research

projects in which the problems of prophylactic treatment and chemoprophylaxis are being investigated on a community basis. Although much of this research is being carried out in population groups with a high or relatively high prevalence of tuberculosis, it may well provide the answers to a number of questions related to the prophylactic use of the antituberculosis drugs in population groups with a much lower prevalence.

One important WHO-supported study, now in the planning stages, involves the total population of Denmark outside the city of Copenhagen. Among this population, only children in tuberculous families are BCG-vaccinated before school age. When the children start school at the age of seven, about 2% are found to be reactors to tuberculin. Up to a few years ago, children of this age were offered BCG vaccination and almost all non-reactors to tuberculin were vaccinated. The study now being planned has two aspects: preventive measures among children and adolescents, and case-finding and treatment among adults.

It is proposed to postpone BCG vaccination from the time of school entrance to the time of school leaving. On entering school, each child will be given the standard tuberculin test. Those found to be reactors to tuberculin will receive INH during the first school year, even if an X-ray examination reveals no sign of tuberculosis. At this time non-reactors will not be vaccinated. At the beginning of the last normal school year (when the children are about 14 years of age), a further tuberculin test will be given. All children found to be reactors to tuberculin will be given INH for one year, including those who have already had a course of INH at the age of seven. Those found to be non-reactors to tuberculin will be BCG-vaccinated, so that the total adolescent and adult population will eventually be tuberculin-positive.

In Denmark, as in many other countries, systematic examination for tuberculosis of population groups has in recent years been largely confined to so-called " organized " groups such as factory workers, state employees, soldiers, etc., with a second examination often after an interval of only one year. This is obviously not the most profitable way of using the mass case-finding units. More emphasis must be given to community screening for tuberculosis covering a higher proportion of people in the older age-groups.

The best method of organizing and carrying out such screening is one of the problems being examined in connexion with the WHO-supported study; what is needed is a practical and economical method which would ensure that a high proportion of cases and potential cases are revealed. Another problem is that of pin-pointing—on the basis of community screening and in particular of mass chest X-ray examinations—the groups having a high risk of developing tuberculosis, so that prophylactic treatment with INH can be given where it is most needed. For this purpose, it will be necessary to keep under observation for several years large population groups which have undergone the standard examination for tuberculosis but in which no suspect cases have been treated. The groundwork for these investigations has been laid by the Danish Tuberculosis Index, which was established in 1951 in co-operation with WHO; this Index contains individual records for the 1.5 million people examined in the nation-wide case-finding programme of 1950-1952. All tuberculosis notifications and all certificates indicating tuberculosis as cause of death are matched with these records.

* * *

The elimination of tuberculosis as a public health problem is now a definite possibility. However, to apply the measures available for this purpose on a sufficiently large scale, considerable charges will have to be made in existing tuberculosis programmes. During the transition period, the exchange of knowledge and experience between countries will assume particular importance, and it will be the task of WHO to ensure that this is carried out in the most effective way.

HEALTH WORK IN EUROPE

The following account of the work of the WHO Regional Office for Europe is based on an article by Dr Paul J. J. van de Calseyde, WHO Regional Director for Europe, which appeared in the Journal of the American Medical Women's Association *in November 1958.*[1]

International health work may be said to have started in Europe, where the first serious efforts to prevent the spread of epidemics from country to country were made during the second half of the nineteenth century. From 1900 on, an increasing number of practical measures for the international control of disease were taken in Europe, and the Office International d'Hygiène Publique (OIHP) with headquarters in Paris was founded in 1907. The disruption of the First World War was followed by intensive collaboration between nations in health work, in Europe and elsewhere, under the auspices of the Health Organisation of the League of Nations and the OIHP.[2] The reporting of outbreaks of pestilential diseases was improved; the idea of preventing the spread of these diseases by protective barriers was gradually replaced by that of fighting them wherever they might exist; and the first attempts were made to provide an international pool of health information and advice.

Foundation of the WHO Regional Office for Europe

In the years immediately following the Second World War, emergency assistance was the order of the day in Europe. Hospitals and health institutions were in ruins and there was a shortage of medical personnel. Tuberculosis and venereal disease had increased to a dangerous extent; there were large numbers of war-wounded, refugees and displaced persons, as well as whole populations exposed to prolonged psychological stress or reduced to starvation level. Substantial international aid was made available through the United Nations Relief and Rehabilitation Administration (UNRRA) and the International Refugee Organization (IRO), both now disbanded, through the United Nations Children's Fund (UNICEF), through Red Cross Societies, etc. By their efforts and those of individual countries, the worst features of the emergency were overcome in a comparatively short time—by about 1950—and the level of health in Europe soon improved to above pre-war standards. Important factors in this rapid recovery were the long-established tradition of public health in Europe, and the general background of comparatively high development. In 1949, a special office for Europe was set up at WHO Headquarters in Geneva; two years later its work had expanded so much that its status was raised to that of a Regional Office.

Taken as a whole, the European Region is perhaps the most developed of all the WHO Regions. In addition to Europe proper, it includes the whole of the USSR, the whole of Turkey, Algeria, Morocco, and Greenland—an area with a total population of about 610 million.

Site, staff and finances

Since 1957, the WHO Regional Office for Europe has been housed in Copenhagen, in a building specially provided by the Danish Government. It has a staff of 95, including 18 health officers; the field staff is considerably smaller than that attached to the other WHO regional offices.

The funds of WHO and its regional offices are derived from: regular contributions by Member States, United Nations Technical Assistance Funds contributed by Member

[1] Calseyde, P. J. J. van de (1958) *J. Amer. med. Wom. Ass.*, **13**, 439

[2] For a general account of the work of the OIHP and the League of Nations Health Organisation, see *Chronicle*, 1958, **12**, 265-268.

States of the United Nations on a voluntary basis, funds made available by UNICEF for programmes arranged jointly with WHO, and funds from the Organization's Malaria Eradication Special Account. The amounts available during 1959 for work in the European Region are as follows: $1 370 000 from the regular budget, $276 000 from Technical Assistance Funds, and $1 120 000 in UNICEF contributions.

Exchange of information

One of the main tasks of the European Office of WHO is to encourage exchanges of ideas and information between Member States on common health problems, e.g., health education, air and water pollution, immunization, cardiovascular disease, dental health, etc. The seminar on the psychiatric treatment of criminals and delinquents, held in Copenhagen from 28 April to 9 May 1958, is a good example of the usefulness of this type of meeting. The fact that the seminar was held in Denmark gave participants an opportunity to study the methods used for the treatment of criminal psychopaths in a country which has devoted special study to this problem. The meeting itself brought out some contrasts in national approaches to the subject, notably between Pavlovians and Freudians, but also revealed many points of similarity in practical methods and aims and showed participants of both schools of thought that there was much they could learn from one another.

Arising from these meetings or from consultations with governments are the studies of various kinds promoted by the Office, which organizes technical conferences to review certain problems—e.g., tuberculosis control, radiation protection, neurotropic virus diseases—and to suggest to the Regional Office the course it should follow in dealing with them. The Office has helped to co-ordinate research on perinatal mortality carried out in several countries, and has supported studies of mother and child separation in England, France and Germany. To facilitate exchange of information among sanitary engineers, it has brought out a multilingual glossary of water and sewage terms.

Surveys undertaken in preparation for international seminars have enabled the Office to collect valuable information on such diverse topics as nursing education, modes of public health administration, mental hygiene practice, legislation in occupational health, and water pollution.

Education and training

WHO in Europe has been particularly concerned with making training available abroad for health workers who lack facilities in their own countries; with providing assistance to training institutions, often by supplying lecturers from other countries; with organizing training courses; and with studying educational trends, policies and standards.

Practically all countries in the Region participate in the WHO fellowships programme. The wealth of facilities for education and training in Europe means that many health workers from other regions come there to study, and in fact about half the fellowships for study abroad granted by WHO are for studies in Europe.

Some examples of recent fellowships may be of interest: a British biochemical research worker has spent four weeks on a rapid visit to laboratories in Denmark, France, Germany, the Netherlands, and Switzerland, to obtain a view of work being done in those countries on the biochemical aspects of tissue and cell culture; a French health administrator has spent a month in the USSR studying public health organization; a Russian physician has taken a three-month course in anaesthesiology in the United Kingdom; a Swedish health physicist has spent five months in the United States studying the disposal of radio-active wastes; a German public health officer has taken a ten-month public health course in the United Kingdom; and a nursing educator from Angola has taken a year's nurse-tutor course in France.

Direct assistance to governments

WHO services to individual governments in Europe have been requested in a wide variety of fields, including: the care of

premature babies (Austria, France, Italy, Spain, and Yugoslavia); the development of nursing services (Morocco and Turkey); vaccine production (Austria); gamma globulin production (Poland); health education (Italy); vital statistics (Turkey and Yugoslavia); the control of communicable eye diseases (certain western Mediterranean countries); malaria eradication (Turkey); the teaching of psychiatry (Denmark and Norway); and child guidance work (Ireland). These services are provided by means of discussions with governments, visits from consultants, the granting of fellowships, activities for the promotion of education and training, or the preparation of detailed plans of action. In a few instances, field staff work directly with the national health services. UNICEF gives considerable material assistance, in the form of supplies, to many of the programmes mentioned.

The future

A number of new problems are now receiving attention from the Office and may be expected to take up an increasing amount of its time in the future. With the rapid development of the peaceful uses of atomic energy and its by-products in Europe, the training of personnel in health physics is becoming increasingly urgent. In arranging courses in this field for engineers, chemists and public health administrators, the Regional Office has been fortunate to obtain the co-operation of the Oak Ridge National Laboratory, Tenn., USA, the United Kingdom Atomic Energy Authority, Harwell, the Centre d'études nucléaires, Paris, and the Centre d'études pour les Applications de l'Energie nucléaire, Mol, Belgium. It is impossible to foresee the full effects of the peaceful uses of nuclear energy in the next decade, but social change will certainly be stimulated and new problems may well be brought into man's social and mental life. These developments may open up important new fields of health activity in Europe.

Increased attention is also being paid to chronic diseases and the public health aspects of ageing. At present, the Regional Office is examining the accumulated information on the health problems of old age and considering how it can be put to the best use. For the study of cardiac and vascular diseases, some internationalization of research—particularly epidemiological research—is considered necessary. A better understanding of the role of nutrition in the onset of these diseases may lead to far-reaching changes. An obvious application would be in the field of hospital dietetics.

The hospital itself is in a period of transition; formerly a centre for sheltered medical care, it is now becoming a social unit with a new relation to the community at large. Here again, the European Office of WHO can play its part by bringing members of related disciplines together for international exchanges of information and experience, and by making training available for hospital administrators.

* * *

The Chronicle has published a number of articles on specific health activities in Europe. Some of the more recent of these articles have dealt with: air pollution (January 1958); training of health physicists (February 1958); the anaesthesiology centre in Copenhagen (March 1958); veterinary public health (April 1958); neurotropic virus diseases (September 1958); psychiatry and the treatment of delinquency (October 1958); teaching of paediatrics (October 1958); dental health services for children (October 1958); research on cardiovascular disease (December 1958); public health nursing (February 1959). An account of another important field of WHO activity in Europe—mental health—will be found in the next article.

MENTAL HEALTH IN EUROPE *

Health problems in Europe may at first sight appear insignificant beside the high infant mortality, the epidemic scourges of malaria and yaws, and the poor state of environmental sanitation in other parts of the world. But no country, whatever its stage of development, is without serious health problems: one of the most important in the highly developed countries is that of mental health.

Nature and extent of the problem

While it is difficult to assess the exact prevalence of mental disorders in Europe, it appears to be much the same in all parts of the Region. As far as can be ascertained from hospital statistics, this applies to the rate of psychosis, and throughout Europe neurotic disorders figure with equal prominence in the records of general practitioners and specialists in internal medicine. Certain countries have special mental health problems: suicide rates are high in Scandinavia, particularly in Denmark; alcoholism is widespread in France and Switzerland, and is increasing in Sweden. More general problems include delinquency, behaviour disorders in children, subnormality, and the upbringing of neglected and deprived children, for it is now recognized that retarded psychological development is the rule among children brought up in institutions. The characteristic mental health problems of old age also require more attention as health standards improve and the life-span increases.

Mental health practice in Europe

For many decades the European countries have assumed increasing responsibility for the care of the less fit of their citizens, and mental health work in Europe is to a large extent a development of the social services. Thus the records of hospitals and physicians give only a partial idea of the scope of this work, since the activities of, for example, children's homes and services for adoption have also to be taken into account. The professional psychiatric journals are no more helpful in this respect, since they are primarily concerned with special cases, special theories and special treatments, and have little to say about the work of psychiatrists in industry and schools, vocational guidance, the aftercare of psychotics, research on mental health in old age, or general work in the field of delinquency.

The question of the organization and payment of medical services is particularly important in connexion with mental health activities, because of the need for team-work between the social and medical services—the characteristic child guidance team, for example, consists of a psychiatrist, a psychologist and a social worker. The USSR emphasizes the close connexion between preventive and therapeutic medicine, and its medical services tend to be organized so that hospital work, out-patient work and home care are all arranged by the same centre and come under the same direction; moreover, these services are based on a full-time salaried system, which eliminates a number of financial complications. The Scandinavian countries and the Netherlands have developed their medical services on a local basis: in Finland, for instance, the financing of medical services is almost always done by small communities. In France, where payment for medical care is often reimbursed by the state, there is a growing tendency to combine medical and social services. These variations in practice mean that a more or less different approach to mental health work is required in almost every country.

* This survey of mental health work in Europe is an adaptation of an article by Dr Donald F. Buckle, Regional Officer for Mental Health, WHO Regional Office for Europe, which appeared in the *Journal of the American Medical Women's Association* in November 1958 (*J. Amer. med. Wom. Ass.*, 1958, **13**, 454).

The role of WHO

While the solution of mental health problems in Europe primarily requires more time, effort, money and training, there is also a need for more knowledge and co-operation within the medical, paramedical and social services. It is here that WHO can be of particular assistance.

Direct advice to countries about their mental health problems is rarely sought and rarely needed; more important is the assistance WHO can give through inter-country meetings. Therapeutic work and, in particular, preventive work in mental health require the simultaneous co-operation of private and public health physicians, psychiatrists, nurses, psychologists, and social workers. The inter-country meetings on mental health, held by the European Office of WHO, provide an opportunity for free discussion of the respective functions of members of the mental health team and of common problems arising in practice. New developments in the therapy and prevention of mental disorders are brought forward, and a process of mutual education takes place. The decisions on when and where such inter-country meetings are held and on the topics to be discussed lie to a great extent with WHO itself, although they are always based on the recommendations of the member countries of the Region.

In the early years of WHO, the Organization's Expert Committee on Mental Health issued two important reports, the first of which stressed the value of preventive work in mental health and suggested that public health services should be encouraged to assume the responsibility for promoting the mental as well as the physical health of the population.[1] This theme was developed in greater detail in the Committee's second report,[2] which dealt with the adaptation of the public health services to include mental health activities, and indicated the necessary changes in professional education and training. The practical problems raised in these reports were subsequently explored by two inter-country meetings, convened by the Regional Office for Europe. At a further meeting to be held by the Office this year, a wide range of mental health subjects will be discussed, including preventive work with children, the avoidance of stress, ways and means of providing early treatment for mental disorders, the organization of the necessary medical and social services, and training.

Mental health in childhood

From the outset, WHO has been particularly concerned with the question of mental health in childhood, and its Monograph Series opened with two important publications on the subject: *Psychiatric Aspects of Juvenile Delinquency* by Dr Lucien Bovet, and *Maternal Care and Mental Health* by Dr John Bowlby. The European Office has convened two seminars on child guidance: the first, for the northern European countries, was held at Lillehammer, Norway, in 1952, and the second in Lausanne, Switzerland, in 1956. A Joint Expert Committee on the Mentally Subnormal Child, on which the United Nations, ILO and UNESCO were represented, was convened by WHO in 1953,[3] and a seminar on the same subject was held at Oslo by the Regional Office for Europe in 1957. A European seminar on the therapeutic and preventive aspects of the care of subnormal children is planned for this year. Preventive work in connexion with mental health in childhood will be explored more fully in a later seminar.

Other mental health problems

Co-operation between the European Office of WHO and the Social Defence Section of the United Nations in the field of the prevention of crime and the treatment of offenders has led to two important seminars, the first on methods of diagnosis, and the second on the psychiatric treatment of criminals and delinquents.

The European Office is at present engaged in a survey of drinking patterns, attitudes towards drinking, and alcoholic disorders in various countries. This survey has already

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1950, 9

[2] *Wld Hlth Org. techn. Rep. Ser.*, 1951, 31

[3] *Wld Hlth Org. techn. Rep. Ser.*, 1954, 75

shown striking differences between the countries of Northern Europe and the wine-producing countries. An understanding of drinking habits will permit practical recommendations for the prevention of alcoholism to be made.

Mental hospital practice, which was the subject of the third and fifth reports of the WHO Expert Committee on Mental Health,[4] is changing rapidly in Europe as a result of the abolition of restrictive legislation in this domain, the " open-door " policy, and the introduction of more active therapies—psychological, social and physical. These changes call for a new approach by the psychiatric nurse as well as by the psychiatrist. A seminar to consider how the training of the psychiatric nurse should be adapted to changes in mental hospital practice was held by the Regional Office for Europe in 1957.

Finally, special studies on the epidemiology of mental disorders have been undertaken at WHO Headquarters, and these will be followed up by specific surveys and studies of the subject in Europe.

[4] *Wld Hlth Org. techn. Rep. Ser.*, 1953, **73**; 1957, **134**

RECOMMENDED ADDITIONS TO THE MEDICAL CURRICULUM

The fifth report of the WHO Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel dealing with the introduction of radiation medicine into the undergraduate medical curriculum [1] was the subject of an article in the February 1959 number of the Chronicle.[2]

There was a strong case, the Committee thought, for the introduction of such techniques as visual aids into the teaching of radiation physics. Documentary and animated films, scale models, and visits to installations would be most helpful, and the students should carry out suitable experiments at various stages of their pre-clinical and clinical studies. The Committee prepared a list of examples of the kind of laboratory experiments, demonstrations, and practical work that might profitably be included in the undergraduate medical curriculum. This list is reproduced below.

Physics

- Use of G-M counter
- Use of scintillation counter
- Use of ionization chamber
- Determination of half-life of an isotope
- Absorption curves of various types of radiation
- Photographic effect of radiation
- Presence of cosmic rays
- Absorption by various materials
- Wilson chamber
- Fluorescence and phosphorescence

Chemistry

- Measurement of reaction velocity by means of radioisotopes
- Contamination of glassware with radioisotopes
- Decontamination by inactive dilution technique
- Oxidation of Fe^{++} to Fe^{+++} by ionizing radiation (concept of " indirect effect ")

Medical statistics

- Disintegration rate as a Gaussian frequency curve

Biochemistry

- Use of an isotope in a specific tracer experiment in animals
- Enzyme inactivation by X-rays; dilution effect

Anatomy

- X-rays to demonstrate anatomical facts

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1958, **155**

[2] *Chronicle*, 1959, **13**, 87

Physiology

Haemodynamics (Na^{24})
Thyroid function test (I^{131}) in rats
Thyroid ablation (I^{131}) and myxoedema
Fluoroscopic demonstration of deglutition, etc.

Histology

Radioautography (e.g., uptake of I^{131} in chicken embryo)

Genetics and cytology

Demonstration of increased mutation frequency (in *Drosophila* or *Neurospora*) after exposure to X-rays

Chromosome breakage and types of chromosomal aberrations induced by ionizing radiations (e.g., meiotic and somatic chromosome damage in *Tradescantia*, suitable animal cells and tumours)

Histopathology

Modifications in cells and tissues following ionizing irradiation (e.g., intestinal epithelium, *Vicia faba*)

Gross pathology or morbid anatomy

Local effects:
Erythema
Burns
Necroses

General effects:
Effects on bone-marrow and blood-forming organs
Effect on intestines
Cancer, leukaemia

Radiology

Demonstration of pertinent techniques of fluoroscopy and radiography

Dose measurements in ordinary X-ray series

Effect of voltage on half-value layer in several materials and on visibility of soft tissues and bone. Demonstration of minimum shadow visible in the chest. Effect of cone and Bucky diaphragm. Disappearance of soft tissue immersed in water

Internal medicine, clinical pathology, isotope laboratory, radiology

G-M measurements
Scintillation counters

Thyroid function test (thyroid uptake and urinary excretion of I^{131})

Participation in diagnosis with isotopes routinely used in the medical clinic for special purposes: blood volume (serum albumin, I^{131}), red cell life-span (Cr^{51}), etc.

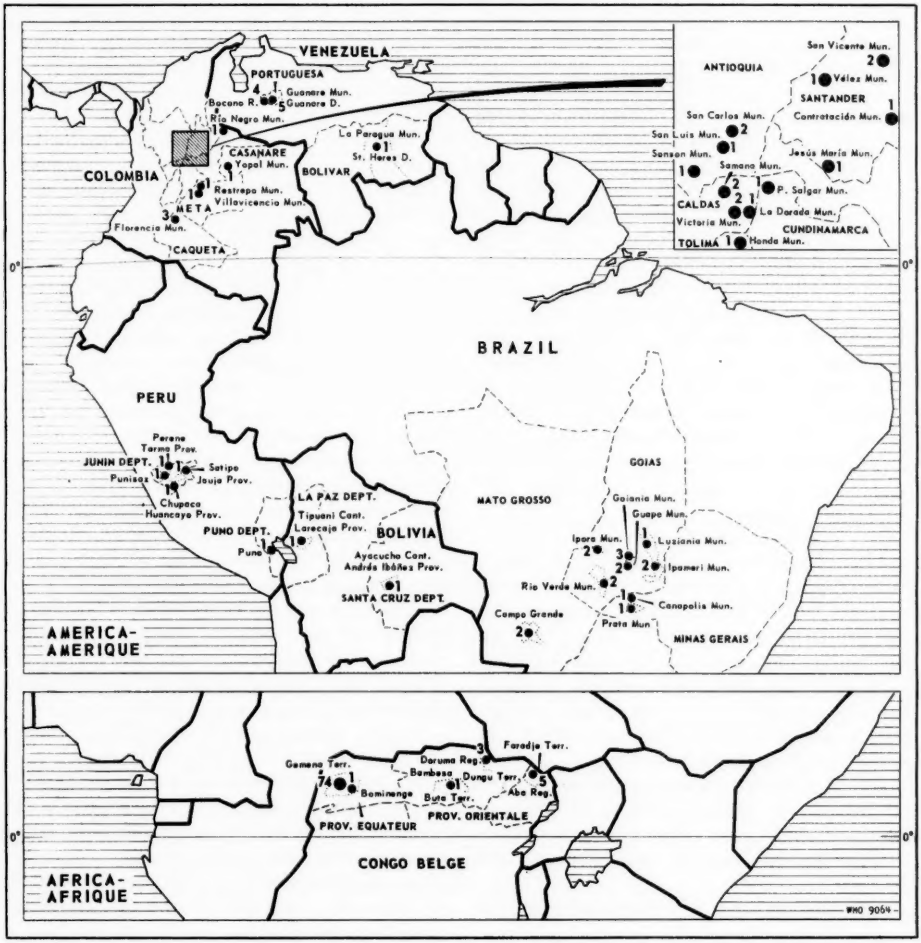
Formal organized course

Repetition of certain previous experiments
Demonstration of nervous system death, intestinal death, bone-marrow death, etc., in rats or mice
Demonstration of effect of oxygen removal (*E. coli*)
Demonstration of protection by compounds of the cysteine-cysteamine group (mice)
Weight changes of various organs following exposure to ionizing radiation
Demonstration of the " indirect effect "

Epidemiological and Statistical Information

YELLOW FEVER IN 1958

A recent number of the WHO *Weekly Epidemiological Record* (No. 7, 1959) contains the following information on the incidence of yellow fever in 1958. According to official notifications, 56 cases of jungle yellow fever were reported in South America in 1958 (as compared with 74 in 1957), of which 23 occurred in Colombia, 16 in Brazil, 10 in Venezuela, 5 in Peru and 2 in Bolivia (see accompanying map). Except for one case in the Puno area of Peru, all cases occurred in areas where the disease had occasionally been reported



during the last ten years. No evidence of the presence of yellow fever in vertebrates other than man was officially notified in America during 1958.

In Africa, all cases reported in 1958 occurred in the Belgian Congo north of the equator; 75 cases were recorded in the Gemena area of the Equateur Province, while 9 were recorded in three areas of the Orientale Province. Of these, 8 were in the Doruma and Aba areas in the north-eastern part of the country where no human cases had been reported for twenty years.

POISONING AS A CAUSE OF DEATH

Deaths caused by poisoning may be accidental, or deliberate (suicides and homicides). Although accidental poisoning is certainly preventable, the period 1950-1956 witnessed an increase in the number of deaths from this cause in eight countries; in six other countries the frequency of such deaths does not show any significant trend, and in one other (the United States) they are on the decline. These and other interesting facts on poisoning as a cause of death can be gleaned from the statistics published in the WHO *Epidemiological and Vital Statistics Report* (Vol. 11, No. 8, 1958) in which data on deaths caused by poisoning (accidents, suicides and homicides) are presented for fifteen countries,[1] for which detailed statistics are available. Only a few aspects of the subject are covered here; more information will be found in the 78 pages of tables in the above-mentioned publication.

Accidental deaths due to poisoning

The frequency of accidental deaths due to poisoning—rate per one million population—varies widely in the fifteen countries considered, from 10.6 (Italy) to 49.0 (Scotland) for males, and from 5.6 (Norway) to 49.5 (Scotland) for females. A high mortality from accidental poisoning (near or over 30.0 per million) is also observed in Denmark, France, and England and Wales.

Deaths from poisoning represent 14.8% of all accidental deaths among females in Scotland, 9.5% in England and Wales, 8.0% in France, and 7.8% in Denmark. The highest proportions of deaths due to poisoning in the male population are 8.3% in Scotland, 6.7% in Denmark, and 5.4% in England and Wales. These data indicate the importance of accidental poisoning as a cause of death and the need for preventive measures.

Deaths from this cause are particularly frequent in certain age-groups, reaching a peak in the age-group 0-4 years, and again in the age-group 45 years and over, with, in general, a rapid increase in the highest age-groups (75 years and over). In the youngest age-group, 0-4 years, mortality from accidental poisoning is higher among children of 1-4 years than among infants, in most of the countries studied.

The proportion of female deaths due to accidental poisoning in relation to total accidental deaths is almost invariably at its highest in the age-group 25-44 years. Exceptions are England and Wales, Sweden and Switzerland, where the proportion is slightly higher in the age-group 45-64 years.

It should be noted that deaths among females due to analgesic and soporific drugs account for about 30% or more of accidental poisonings in Australia, Canada, Denmark, Japan, New Zealand, Sweden and the United States, which may indicate an abuse of these drugs in the countries concerned.

Utility (illuminating) gas is still the most frequent cause of accidental poisoning in most of the fifteen countries studied. It is responsible for 40% or more of accidental deaths due to poisoning among females in nine of them, and among males in seven of them. Combustion gases are responsible for a relatively high proportion of accidental poisonings in Belgium, France, and Holland,

[1] Australia, Belgium, Canada, Denmark, England and Wales, France, Italy, Japan, Netherlands, New Zealand, Norway, Scotland, Sweden, Switzerland, the United States

PERCENTAGE OF DEATHS DUE TO CERTAIN TYPES OF POISON IN RELATION TO ALL ACCIDENTAL DEATHS BY POISONING

Country	Analgesic and soporific drugs		Utility gas		Combustion gases	
	M	F	M	F	M	F
Australia (1954/1956)	20.9	30.7	19.6	20.1	4.3	4.2
Belgium (1954/1955)	4.8	10.0	40.8	48.5	26.5	26.2
Canada (1954/1956)	17.1	37.5	27.7	30.5	23.3	8.5
Denmark (1954/1956)	19.8	31.1	46.0	52.8	18.1	7.2
England and Wales (1954/1956)	20.7	23.7	58.9	69.6	7.4	1.7
France (1954/1956)	6.1	8.8	52.5	58.2	23.4	21.0
Italy (1953/1955)	2.6	4.8	28.6	40.0	16.3	11.8
Japan (1954/1956)	18.8	29.2	7.2	11.7	13.9	16.3
Netherlands (1954/1956)	7.0	4.9	50.5	58.6	17.2	24.1
New Zealand (1953/1955)	14.6	35.0	37.5	45.0	6.2	10.0
Norway (1954/1956)	13.3	27.6	4.0	10.3	6.0	6.9
Scotland (1954/1956)	16.1	19.8	74.5	77.1	1.1	—
Sweden (1953/1955)	24.7	48.6	11.3	19.4	30.4	8.3
Switzerland (1954/1956)	—	—	41.4	61.8	14.4	4.1
United States (1954/1956)	18.7	34.6	19.5	22.5	25.2	12.3

among both sexes, and among males in Sweden (30.4%), Canada (23.3%) and the United States (25.2%). It would be useful to bear these facts in mind when taking measures to prevent accidental poisoning.

The proportion of deaths due to poisoning by analgesic and soporific drugs, by utility gas, and by combustion gases, to all deaths due to accidental poisoning, for both males and females, is shown in the accompanying table.

Suicides

Suicide by poison is even more frequent than accidental poisoning; this applies to all the countries studied except Canada and France (both sexes), Scotland (females), and Italy (males). In Japan, the death rate from accidental poisoning is 20.4 for males and 9.1 for females per one million population, while the rate for suicide by poison is 135.6 for males and 83.4 for females; the situation is almost the same in Denmark, England and Wales, and Sweden. The proportion of suicides in which poison is used ranges from 7.7% (France) to 54.5% (England and Wales, and Scotland) for males, and from 20.9% (France) to 66.6% (Denmark) for females. In all fifteen countries, poison is used by a higher proportion of female suicides than of male suicides, except in Japan where the rates are roughly the same for both sexes.

Homicides

In only a few countries is there a relatively high proportion of homicides by poisoning, the highest being in Denmark, where poison is used in 38.1% of all homicides of males and 35.6% of all homicides of females; in England and Wales the proportions are 16.7% for males and 17.2% for females. In two countries (Netherlands and Switzerland) poisoning accounts for about one in every ten homicides; in most of the other countries studied, however, the proportion is much lower.

Reports of Expert Groups

HOSPITAL LABORATORY SERVICES *

In his inaugural address as President of the Eleventh World Health Assembly in May 1958, Dr Leroy E. Burney claimed that it was "a paramount responsibility of the world health community to reduce the lag between the discovery of new knowledge and its application".[1] The hospital laboratory, with its highly trained medical and scientific staff, plays an important part in bridging this gap and the services its provides are, in fact, essential if modern methods are to be used in the diagnosis, prognosis, treatment and prevention of disease. A recently published report of the WHO Expert Committee on Health Laboratory Methods[2] reviews existing hospital laboratory services and contains recommendations for improving them.

Present situation

On the basis of information collected from 22 countries, the report shows that grave defects exist in the hospital laboratory services in many parts of the world, either because the services have not been sufficiently developed or because conflicting interests have led to a complex heterogeneity of laboratories not always organized in the best interests of the community as a whole. Depending on the country, the hospital laboratory services may be administered by the central, provincial, district or municipal government or by hospital boards, universities, or research organizations. Wide variations are also found in the organization of the laboratories, depending in part on the nature of the diseases prevalent in the country, in part on the distribution of the population, and in part on the geographical conditions and the political and administrative structure. Naturally, the type of hospital also influences the quality and amount of laboratory service provided, the regional hospital usually having the most highly developed laboratory service and the local hospital the least, while the "rural" type of local hospital seldom has any laboratory services available.

Functions of hospital laboratories

The services traditionally supplied by hospital laboratories include: morphological pathology (morbid anatomy, histopathology, histochemistry, and exfoliative cytology), chemical pathology, microbiology (bacteriology, parasitology, mycology, virology, and immunology), and haematology. The report points out that these functions do not necessarily represent the divisions of any single laboratory: in countries with more highly developed laboratory services, each of the major laboratories may comprise a group of integrated units, but in countries with less developed laboratories, such a division of functions may not be possible. In some countries, medical biophysics is being developed as a function of hospital laboratories, since a number of biophysical techniques are emerging as useful in diagnosis, particularly the use of radioisotopes. The complex tests of physiological function carried out in many clinical departments have, in a few countries, been concentrated in departments of clinical physiology, and laboratory tests for allergy, although usually

* WHO Expert Committee on Health Laboratory Methods (1959) *Second report: Hospital laboratory services* (*Wld Hlth Org. techn. Rep. Ser.*, No. 161), 30 pages. Price: 1/9, $0.30, or Sw.fr. 1.—. Also published in French and Spanish.

[1] *Chronicle*, 1958, **12**, 225

[2] The members of the Committee were: Dr J. Desbordes, France; Professor J. Horejsi, Czechoslovakia (Vice-Chairman); Professor V. S. Mangalik, India; Professor J. F. Murray, Union of South Africa (Rapporteur); Dr K. B. Rogers, United Kingdom; Professor J. F. Seitz, USSR; Dr G. Z. Williams, USA (Chairman). The Secretariat consisted of: Dr A. L. Bravo, WHO; Dr Hans Ericsson, Sweden (Consultant); Dr R. Sansonnens, WHO (Secretary).

considered clinical procedures, are occasionally performed in the hospital laboratory.

The report advocates that research should also be regarded as part of the function of every laboratory and points out that it is essential to the development and maintenance of an adequate standard of laboratory practice. Even if the laboratory does not engage in fundamental research, there are many methodological, epidemiological, and clinical problems that it can help to solve. While these necessitate close collaboration between the laboratory and the clinical departments, this does not mean that the laboratory research must be directed by a clinician nor that the head of the laboratory should not undertake independent investigation. Moreover, the report stresses that no laboratory results should be used by the clinician for research purposes except in collaboration with the pathologist and that the pathologist should not try to evaluate the clinical importance of results except in consultation with the clinician. In university centres, collaboration between the hospital laboratory and science departments is as important as collaboration between the laboratory and the clinical departments.

Relationship between hospital and public health laboratories

Although a public health laboratory service is concerned primarily with the health of the community and a hospital laboratory with the health of the individual, there is much overlapping of function and, in most countries, the two services show some degree of integration. The less developed the community or hospital, the more probable it is that one laboratory will provide both services. Complete integration of the two services can only exist, however, if they are both administered by a government authority, either directly or through some other organization, such as a medical research council. In practice, the hospital laboratories are more often responsible only to the hospitals they serve and consequently tend to be more diversified in their standards, techniques, and organization than the public health laboratories which are responsible to a government department.

One of the major advantages of integration is the elimination of overlapping functions, particularly in the field of microbiology. Much duplication of accommodation and equipment can be avoided, with a considerable saving in administrative costs. An integrated service also places emphasis on the important preventive aspect of medicine, and it brings together the clinician, the pathologist, and the medical officer of health who may seldom have professional contact if the public health and hospital laboratories operate independently. Particularly in those countries that have vast, densely populated areas but little or no laboratory service and, often enough, no medical or sanitary service, there is an urgent need for a single system fulfilling the dual function of a hospital and public health laboratory service. Simple diagnostic facilities of the out-patient type could well be provided by mobile laboratories. The report emphasizes that, in spite of the advanced state of public health and the high standard of hospital pathology in many countries, there are still large areas of the world where such simple, all-purpose laboratory services are badly needed.

Against integration of the hospital and public health laboratory services it may be argued that the pathologist is liable to concentrate on the diagnostic problem of the individual hospital patient and to lose sight of the welfare of the community. Moreover, separation of the two services enables training to be more specialized and a higher degree of technical and professional proficiency to be obtained. There is thus much to be said for this system in highly developed countries with extensive hospital and laboratory services, but in less developed countries, in which trained professional and technical staff are at a premium, the advantages of integration outweigh its disadvantages.

From the review of existing conditions, the report concludes that a well-organized and closely integrated system of laboratories is at present to be found in only very few countries, and that in all others there is some need for better co-operation. Whether the two ser-

vices should be separate or should be partly or completely integrated can only be decided in the light of the available personnel, the degree of development of the country, and its traditions, geographical and sociological features, and medico-political pattern. At all events, where there is a dual system of laboratories, close collaboration should be established between the two services and the smaller laboratories should be provided with technical assistance and supervision.

Planning and organization of hospital laboratory services

The type, size, and organization of hospital laboratories will be influenced by a number of factors, including the extent of the existing hospital and public health laboratory services, the general health status of the population, its age structure, density and distribution, and whether it is increasing, static or decreasing. The health status and epidemiological problems of adjacent territories will also have to be considered. Expansion should start with the regional hospitals and proceed downwards to the local hospitals so that priorities can be established according to a predetermined plan and within the available financial resources.

The report lays emphasis on the need to allocate an adequate amount of space in planning a hospital laboratory with provision for future growth of the hospital, out-patient department, specialized clinics and population served, as well as for an increasing demand for laboratory tests as medical science advances. The laboratory should not be relegated to some remote part of the building, but should be sited on a main hospital traffic lane so that it is easily accessible to the clinical staff. When designing the laboratory it is important that careful thought should be given to the nature of the equipment to be included, especially in the case of larger or specialized laboratories.

Among a number of budgetary considerations to which the report draws attention are the need to make adequate provision for the replacement of equipment before it has deteriorated to the stage where it acts as a brake on the efficiency of the laboratory, and the importance of setting aside a portion of the budget to cover technical assistance for research activities. Scientific problems of a more extensive nature, however, should be supported by some foundation for scientific research or by special funds.

Facilities and staffing of hospital laboratories

The report advocates that every hospital, however small, should possess a laboratory within its own precincts, but the extent of the facilities to be provided will naturally depend on the size of the hospital. Both in the regional hospital (usually 300 beds or more) and the intermediate hospital (usually 100 to 300 beds), the laboratories should be equipped and staffed to carry out the more important procedures in chemical pathology, microbiology, and haematology. Except in the smaller intermediate hospitals, a service in morphological pathology should also be available on the premises. Wherever possible, the regional hospital laboratories should comprise, in addition, a number of supplementary units specialized in such techniques as biophysics and virology. In the largest centres, complete diagnostic, research, training, reference, and consultant facilities must be available.

One of the limiting factors in establishing or expanding a hospital laboratory service is likely to be the difficulty of finding suitable personnel. Every effort should therefore be made to organize an adequate training programme and to provide working conditions that will attract workers of the highest quality. In the largest hospitals, laboratory units with satisfactory facilities for the training of technical and auxiliary personnel should build up a corps of skilled laboratory workers which can be used to establish laboratories in the smaller hospitals. The report recommends that all hospital laboratory staff should be employed on a full-time basis and that remuneration should be adequate to ensure that the economic status of medical and technical laboratory personnel is equivalent to that of their colleagues in other fields of medicine.

The director of a laboratory in a regional or intermediate hospital should have had a long training in the main branches of clinical pathology and also some clinical experience. He must not only supervise the work of his staff but also act as consulting colleague to the clinician, helping him to seek solutions to his clinical problems by the application of new or established laboratory methods. The staff working under him should include a number of assistant pathologists (medical or non-medical graduates), as well as technicians, laboratory aides, and administrative and clerical staff. Non-medical graduates are frequently in charge of special sections of the laboratory, and when they carry senior administrative responsibility, they should be given an equivalent status to their medical colleagues.

The local hospitals have less need of a full range of laboratory tests and it may be sufficient for them to be staffed by technicians under the control of a clinician and a visiting pathologist. It is noted, however, that in some countries these small hospitals serve a vast population, so that although the number of beds is small, the volume of outpatient laboratory work is very large. In such cases, the staff should include non-medical graduates under the control of a full-time pathologist.

The number of staff allocated to a laboratory should be in proportion to the work load. The Committee was of the opinion that the " unit " systems for measuring the work load which have been used in various countries are expensive, cumbersome, and unscientific, and do not provide more information than a simple determination of the mean number of tests carried out per unit time. An excessive work load not only impairs efficiency and accuracy but also increases occupational risks, especially in work on tubercle bacilli, enteric pathogens, and viruses. It is recommended that rules for laboratory hygiene and the prevention of laboratory infections should be worked out on an international level.

AUXILIARY DENTAL PERSONNEL *

The need for improved dental health services has been recognized for some years. While the longer period of training now considered necessary for dental practitioners undoubtedly increases their efficiency, it also means more expensive services. As a result, the work of the fully qualified dentist is being increasingly supplemented by that of auxiliary personnel operating at lower levels of responsibility.

The " dental health team ", consisting of a dentist and one or several competent auxiliaries, has proved successful in a number of countries with well-organized dental health services. To determine to what extent the adoption of this system might help to solve dental health problems in other countries—and particularly in those which at present provide little or no dental care—WHO convened an Expert Committee on Auxiliary Dental Personnel.[1] The report of this Committee has now been published.

The " dental hygienist ", the " school dental nurse ", the " dental laboratory technician ", and the " chairside assistant " are among the auxiliary members of the dental health team. Their tasks vary: some of them are not allowed any contact with the patient, others are qualified to give limited dental treatment in accordance with the regulations in force and with their individual training.

The programme for dental health care recommended in the report is intended

* WHO Expert Committee on Auxiliary Dental Personnel (1959) *Report* (*Wld Hlth Org. techn. Rep. Ser.*, No. 163), 32 pages. Price: 1/9, $0.30, or Sw. fr. 1.—. Also published in French and Spanish.

[1] The members of the Committee were: Dr James Deeny (Ireland); Dr A. I. Doinikov, USSR (Vice-Chairman); Dr A. Maxwell Horsnell, United Kingdom; Dr Olof K. Osvald, Sweden; Dr Shailer Peterson, USA (Rapporteur); Dr J. Llewellyn Saunders, New Zealand (Chairman); Dr C. J. Sundram, Malaya. The Secretariat consisted of: Dr Mario Chaves, PASB; Dr J. S. Peterson, WHO; Dr Carl L. Sebelius, WHO (Secretary); Dr. W. Stewart Ross, United Kingdom (Consultant); Professor F. C. Wilkinson, United Kingdom (Consultant).

particularly for countries where services are just starting. It provides for extension in the training of personnel and thus for continued improvement in the quality and scope of the services. It is recommended that the dentists themselves be given some instruction on how to make the best use of auxiliary personnel.

Functions and training of auxiliary personnel

The report advocates formal training courses for each category of auxiliary staff.

The *chairside assistant*, who receives the patient, prepares the instruments and necessary material, etc., is considered to be an indispensable member of the dental team. Training for this category of personnel will naturally vary according to the services to be rendered. Generally speaking, candidates should have completed secondary education and should be given a year's training course with instruction in sterilization, preparation of filling and impression materials, care of instruments, record-keeping, first aid, etc.

The specific task of the *dental laboratory technician* is to make prosthetic and orthodontic appliances under the direction of the dentist and without any contact with the patient. Candidates must have sufficient basic education to enable them to assimilate a two-year, or possibly three-year, technical course; they will be taught the elementary principles of physics, chemistry and the biological sciences in relation to their specific duties, the correct handling of the materials used in their work, and the care of instruments and equipment. They will also be instructed in the techniques used in the making of complete or partial dentures, ceramics and porcelain work, crowns, bridges, etc.

The report stresses the importance of the *dental hygienist* who can work either as an auxiliary under the close supervision and direction of a dentist in private practice, or as a member of the public health team with a certain amount of autonomy. The dental hygienist's work is extremely useful because it reaches a very large sector of the population. It includes: the cleaning of teeth and the removal of calculus; individual and group instruction on oral hygiene; topical application of fluorides or other prophylactic solutions; preliminary examination of special population groups (schoolchildren, factory workers, etc.) for the purpose of referring cases in need of treatment to qualified dentists; maintenance of liaison with local public health nursing services to ensure that treatment is effectively followed up.

In countries using dental hygienists, the length of training varies from two to four years, but it might well be reduced to one calendar year in countries introducing this type of personnel for the first time. The curriculum should include: the elements of anatomy and physiology, with emphasis on the oral cavity; macroscopic and microscopic study of the teeth and their supporting structures; causation, prevention and treatment of dental caries; the clinical practice of oral prophylaxis and instruction of the patient in home care and dental health principles; a brief study of the most common diseases of the oral cavity and their prevention; dental health education methods and materials used in schools, health centres and private practice; records and follow-up procedures; and, finally, professional ethics and jurisprudence.

Another type of auxiliary personnel which has been used successfully for many years in some countries is the *school dental nurse* who works exclusively in the public health team and is trained specifically to deal with children of school or pre-school age. She is generally required to supervise and maintain the dental health of about 500 children, each of whom is examined about every six months; she instructs the children in oral hygiene and, in addition to preventive work similar to that of the dental hygienist, she fills and extracts teeth (under local anaesthesia). Dental conditions beyond her scope are referred to a dentist. The school dental nurse requires a minimum of two years' training and, in addition to learning specific operative techniques, she should be instructed in modern teaching methods and the art of public speaking, so that she may teach oral hygiene and preventive measures to school classes, teachers, parent-teacher associations and

similar groups. The use of school dental nurses permits a dental health programme employing only a few dentists to reach large numbers of children.

Evolution of dental health services

Generally speaking, it may be said that three categories of persons at present provide dental care, i.e., professionally qualified dentists, auxiliary personnel, and non-qualified persons. With the development of dental health programmes, the last-named category is tending to disappear.

The dental profession has evolved very rapidly and the wide divergencies existing today are due to the fact that dental services in the various countries are at different stages of evolution: in some dental treatment may be in the hands of a few untrained persons who devote all or part of their time to dental work, while in others dental health teams working under the supervision of qualified dentists are dealing efficiently with very large numbers of people.

Some developing countries have endeavoured to organize dental services from the outset on the lines adopted in the more advanced countries by introducing comprehensive training courses for dentists. These programmes have failed largely because the few dentists it has been possible to produce were insufficient to attend to the needs of any considerable part of the population and confined themselves to the upper-income groups, leaving the others still in the hands of unqualified practitioners.

In general, it may be said that the lower the number of inhabitants per dentist, the higher the standard of dentistry. The report publishes a table—reproduced here—showing population/dentist ratios throughout the world, classified by continent.

In considering these ratios, it must be remembered that even in countries with less than 2000 inhabitants per dentist, adequate dental care may still not be available to certain sections of the population.

Use of auxiliaries in countries with organized dental services

The report recommends that particular emphasis be laid on prevention. This is a field in which certain types of auxiliary, (e.g., the dental hygienist and the school dental nurse) play a very important role. With the creation of dental health teams, the dental

POPULATION, IN THOUSANDS, OF COUNTRIES AND TERRITORIES WHICH FALL WITHIN SPECIFIED RANGES OF POPULATION-PER-DENTIST RATIOS *

Area	Population per dentist				
	1 000 000 or more (group 1)	100 000 to 999 000 (group 2)	10 000 to 99 000 (group 3)	3000 to 9900 (group 4)	less than 3000 (group 5)
Africa	51 002	82 593	68 681	42	—
Asia	1 260	485 497	131 620	5 352	89 688
Europe	—	—	74 080	189 780	92 144
North America	—	—	—	187	183 408
Central and South America	—	—	61 103	87 117	21 279
Oceania	—	1 572	1 003	88	11 273
Total	52 262	569 662	336 487	282 566	397 792

* Data taken from the *United Nations Statistical Yearbooks*, 1955 and 1956. Information was not available from several countries.

services will be able to cover a much larger proportion of the population. However, more attention should be paid also to research in preventive dentistry, to the necessity for adequate evaluation of preventive dentistry methods, and to research in educational methods.

Programme for countries with little or no dental services

Certain general recommendations are made, but it will be necessary for each country, through its experts or with the help of foreign or international organizations, to adapt them to its own special needs. In general, the government of a country should take responsibility for the application of the programme and to this end create a dental health division within its health department and provide as much as possible of the necessary finances; when the services have reached a certain phase of development, various systems of payment could be introduced in accordance with the pattern for provision of health services in each country.

The programme must always be sufficiently flexible to allow for subsequent modification and extension. At least two categories of personnel must be provided for, i.e., dental licentiates and dental aides. One or more of the country's recognized educational institutions should undertake the training of this personnel, awarding the appropriate diplomas or certificates. Great care should be taken to select suitable persons, as they will have to form the nucleus of the future dental profession.

In many regions where services are in their early stages, *dental licentiates* will of necessity act in the place of fully qualified dental practitioners. They must therefore be given technical training that will enable them to exercise their functions under remote supervision and control, if necessary. Candidates should have sufficient basic education to enable them to assimilate the necessary instruction, and the training period should be not less than two years. During the first year the course should cover: instruction in the basic medical sciences as related to dentistry; dental anatomy; materials used in dentistry; practice in operative procedures on dental models; basic principles of oral hygiene and prevention of dental disease, etc. In the second year the emphasis should be on clinical work with patients, but special aspects of public health, health education, the history of dentistry, and professional ethics should also be included.

The second category of personnel—*dental aides*—may have to be used in certain cases to carry out elementary dental treatment until a sufficient number of dental licentiates can be trained. As their main function will be the extraction of teeth for the relief of pain, their course of training should include practical methods of sterilization, the use of drugs for the relief of pain and the control of infection, and the recognition of potentially dangerous conditions which require the services of a more highly qualified person. They should receive four to six months' formal training followed by at least six months' practical training under direct and constant supervision.

Implementation of programmes

It is essential that every programme for the organization of dental services should be integrated into the general health organization of the country. It is therefore proposed that dental activities within the Ministry of Health should be directed by a dental officer, who—together with all those holding key posts in the programme—should be carefully selected. The extent of dental morbidity should be determined, and organizational and methodological problems solved before the programme begins. During the planning phase, the following factors should be taken into account: time, availability of personnel, equipment and funds, co-operation with international organizations and the possibilities of expanding the programme in the future. The government should take an active part, making the programme as widely known as possible through an appropriate health education campaign. The organization of the work should be in the hands of competent staff who will carefully select capable teachers to undertake the training of personnel.

HYPERTENSION AND CORONARY HEART DISEASE*

One of the far-reaching recommendations made by the Eleventh World Health Assembly when it met last year was that WHO should step up its efforts to stimulate and co-ordinate research in a number of fields of medicine, including such world-wide problems as cancer and heart disease. A programme along these lines was recently elaborated by the Executive Board at its twenty-third session (see Chronicle for March). In the meantime, WHO had already called together an Expert Committee on Cardiovascular Diseases and Hypertension to discuss the public health aspects of cardiovascular disease, to consider the classification of the various forms of hypertension and coronary heart disease, and to suggest criteria for diagnosis to be used in epidemiological studies.[1]

Preliminary considerations

Although the Committee had agreed that, of the various cardiovascular diseases, hypertension and coronary heart disease are most in need of epidemiological study at the present time, the public health importance of certain other cardiovascular diseases is briefly discussed in the opening pages of the report.

The comparative importance of congenital cardiac defects is greatest in countries where infant mortality is lowest. On the other hand, it is in the less developed countries that environmental factors affecting the mother are likely to play the biggest role in the causation of congenital defects. Unfortunately the incidence in many of these countries is unknown More precise incidence figures would throw considerable light on the significance of environmental factors. As yet, maternal rubella is the only such factor that has been definitely proved to be concerned in the production of congenital defects. Consequently, effective preventive measures cannot be proposed.

A decade or so ago, syphilis was one of the more important causes of cardiovascular disease, but the advent of penicillin has changed the picture completely. Mortality statistics show that there has been a great decrease in the number of deaths recorded as due to syphilitic cardiovascular disease, and the public health problem now centres on prevention through early case-finding, tracing of contacts, and prompt treatment of all persons with early infections. The report therefore stresses the importance of ensuring that adequate supplies of penicillin are available in all parts of the world.

The public health importance of pulmonary heart disease (cor-pulmonale) varies widely in different countries. These variations are presumably related to differences in the prevalence of chronic bronchitis and bronchial asthma, the common forerunners of emphysema. The prevention of pulmonary heart disease is dependent on the prevention of the underlying respiratory disease. There is a need for more research into the causes of chronic pulmonary disease, but meanwhile increased efforts should be made to eliminate or reduce atmospheric pollution and dust hazards and to prevent occupational respiratory diseases, such as silicosis, coal-workers' disease, byssinosis, and beryllium poisoning.

Another important cause of heart disease is rheumatic fever, which is still a major public health problem all over the world. Penicillin prophylaxis of relapses of rheumatic fever has been recommended by the WHO Expert Committee on Rheumatic Diseases [2]

* WHO Expert Committee on Cardiovascular Diseases and Hypertension (1959) *First report. Hypertension and coronary heart disease: classification and criteria for epidemiological studies* (*Wld Hlth Org. techn. Rep. Ser.*, No. 168), 28 pages. Price: 1/9, $0.30, or Sw. fr. 1.—. Also published in French and Spanish.

[1] The members of the Committee were: Dr P. W. Duchosal, Switzerland; Professor J. J. Groen, Israel (Chairman); Dr H. E. Hilleboe, USA (Vice-Chairman); Dr J. N. Morris, United Kingdom (Rapporteur); Dr F. Rojas Villegas, Chile; Professor D. D. Rutstein, USA; Professor J. Speransky, USSR (Vice-Chairman); Dr O. Torgerson, Norway. The Secretariat consisted of: Dr A. L. Bravo, WHO; Dr T. R. Dawber, USA (Consultant); Mr J. Nielsen, WHO; Dr T.S. Sze, WHO (Secretary).

[2] *Wld Hlth Org. techn. Rep. Ser.*, 1957, **126**. See also *Chronicle*, 1957, **11**, 150.

and by other bodies, but the extent to which this recommendation is being followed is unknown. The report again directs the attention of all countries to this important public health measure.

Prophylactic use of penicillin can also prevent many cases of bacterial endocarditis, the majority of which are secondary to valvular heart disease or congenital heart defects. The report calls attention to the need for early diagnosis and treatment to prevent serious valvular damage, and recommends that all persons with rheumatic and congenital heart disease should receive penicillin prophylaxis during procedures likely to cause invasion of the blood stream by haemolytic and non-haemolytic streptococci.

Epidemiology of hypertension and coronary heart disease

The relative importance of these two diseases is difficult to assess as they are often associated. Together they are responsible for the greater part of the cardiovascular disease and death occurring in adults. There is an urgent need to establish the true frequency of coronary heart disease, hypertension and related conditions. The epidemiological data at present available are inadequate and, owing to lack of agreement regarding the clinical concepts and terminology of cardiovascular disease,[3] data from different countries are not comparable. The Committee recognized the shortcomings of the section of the International Classification of Diseases[4] relating to diseases of the circulatory system, and realized that it is complicated and difficult to apply. Any improvement in the Classification should, in time, be reflected in more accurate and comparable statistics. The report advocates the speeding up of studies to determine the use being made of the International Classification of Diseases by national offices of vital statistics in allocating causes of death, and to compare national customs and nomenclature in completing death certificates. An investigation of this type has already been started by the WHO Regional Office for Europe. It is realized, however, that a long period of re-education of the medical profession would be needed to change existing practices and bring about an improvement in death certification sufficient to result in a substantial improvement in national statistics.

Another source of error in mortality statistics is the recording of more than one disease on the death certificate. The diseases may be inter-related, forming a disease complex (e.g., coronary heart disease and hypertension), or they may simply co-exist, as, for example, heart disease and diabetes in the middle-aged (multiple-cause tabulation). The report recommends that research should be carried out both on the classification of disease complexes and on multiple-cause tabulation.

Difficulties in diagnosis and lack of precise criteria also render the available morbidity data of little value in epidemiological studies. The Committee believed that the only hope of real progress in the epidemiology of hypertension and coronary heart disease lay in field studies. In the case of hypertension, the report recommends that community studies should be made throughout the world to determine possible differences in blood-pressure distribution in many populations. It is important that an adequate description of the populations should be possible and that the same criteria should be used in all such studies. Field studies on the epidemiology of coronary heart disease are already under way in several countries, but there is considerable scope for expansion of these studies, both in developed and in less developed countries, which may offer special situations and opportunities. Particular stress is laid on the value of prevalence studies and direct incidence studies among different groups, for example, comparisons between smokers and non-smokers, between sedentary workers and physically active workers, or between people on different diets. The report points out, however, that such incidence studies must inevitably be continued over

[3] See *Chronicle*, 1958, **12**, 398.

[4] World Health Organization (1957) *Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death, 1955 Revision*, Geneva

many years, owing to the long incubation period of coronary heart disease.

Criteria for diagnosis

The above considerations make it clear that one of the first essentials is to establish uniform criteria for the diagnosis of coronary heart disease and hypertension, and the report contains a number of suggestions for minimal diagnostic criteria to be used in epidemiological studies and for the classification of the various forms of coronary heart disease and hypertension. Workers in the field are invited to send in their suggestions and criticisms for embodiment in further revised versions of these criteria.

Hypertension

It is now recognized that no sharp line of demarcation can be drawn between normotensive and hypertensive persons, the blood-pressures being distributed continuously throughout the population. However, at either end of the distribution curves there are reasonably homogeneous groups, and the report suggests that for statistical purposes in field studies 140/90 mm Hg should be regarded as the upper limit of the normal range, while all blood-pressures above 160/95 should be regarded as definitely in the hypertensive range. This does not imply, however, that these limits are of any significance as far as the individual is concerned. The report also contains a number of recommendations regarding the technique that should be employed in taking blood-pressure measurements in order to ensure dependable and comparable readings.

In classifying hypertension, a distinction must be made between hypertension associated with other diseases and " essential hypertension " for which no specific cause can be found. The report lists a number of diseases that give rise to purely systolic hypertension and others that are associated with diastolic hypertension, in most cases accompanied by systolic hypertension as well. Essential hypertension may be further subdivided into "complicated" and "uncomplicated". In the former case, clinical, ophthalmoscopic, X-ray, electrocardiographic, or laboratory studies reveal evidence of cardiac hypertrophy and/or vascular involvement of the brain, retinae, kidneys or heart. " Malignant hypertension " is defined as a severe and rapidly progressive form of essential hypertension. The report urges that all persons found to be hypertensive in field surveys should be further examined for a specific etiological factor and in order to determine whether or not any cardiovascular changes have taken place.

Coronary heart disease

The Committee recognized four principal manifestations of coronary heart disease, and attempted to assess their value as indicators of the occurrence of the disease in population groups. The first of these was angina pectoris, which could be subdivided into " definite " angina of effort and " probable " angina of effort. In the case of " definite " angina of effort, the pain occurs centrally in the front of the chest at the mid- or upper-sternal level, radiating to the left arm or both arms, round the chest, or into the neck or jaw, whereas in " probable " angina of effort, the pain may begin in any of these sites of radiation or above the left nipple, and it may pass with further effort. A diagnosis of angina pectoris should not be made if the pain occurs (*a*) *after* cessation of effort, e.g., in anxiety states, (*b*) only in relation to meals and posture, e.g., in hiatus hernia, or (*c*) in relation to special movements or positions, e.g., in arthritis or fibrositis, nor in the case of a " stabbing " or lancinating pain below the left breast, as may also occur in anxiety states.

The report emphasizes the importance of ensuring that the conditions of examination allow good rapport between observer and subject, and suggests that where possible observers from different surveys should be checked against each other for " inter-observer variation ". The history should preferably be taken by an experienced physician. Failing this, it may be taken by a trained interviewer, but in this case the diagnosis made should be checked by a physician. Questionnaires completed by the

subject are considered generally unsatisfactory, except for highly selected populations.

Acute myocardial infarction is unlikely to be encountered in field surveys, but it is considered important to detect persons who have experienced a myocardial infarct. The patient may give a clear history, describing a severe chest pain, gradual or, more often, sudden in onset, and similar in character to the pain of definite angina of effort. This may have been associated with collapse or other symptoms, often severe enough to necessitate prolonged bed-rest. If the patient had been admitted to hospital, it may be possible to obtain further, objective evidence, and it was emphasized that the most important signs of myocardial scars are to be found in the electrocardiogram.

Sudden death is sometimes used as an index of the frequency of coronary heart disease. The Committee felt that there is not enough quantitative evidence available at the present time to justify this procedure but that further research on this question would be profitable. It is recommended that, except in special studies, the term " sudden death " should be used only in the sense of " instantaneous death ", that is, death occurring within a few minutes. The Committee believed that a useful index should be obtainable if quantitative estimates are made, in unselected populations, of the proportion of sudden deaths due to coronary heart disease in comparison with those due to other manifestations of cardiovascular disease.

Many clinicians are inclined to label all cases of congestive heart failure in elderly patients as " arteriosclerotic heart disease ", unless other conditions are evident. The multiple areas of myocardial fibrosis found at necropsy are regarded as scarred areas due to microscopic infarcts, but the Committee felt that this view had not been substantiated and that there are no grounds for the assumption that all cases of heart failure exhibiting so-called diffuse myocardial degeneration are due to coronary heart disease. Consequently, chronic heart failure is not considered to be a useful indicator of coronary heart disease.

Methods of diagnosis of coronary heart disease

Of the clinical methods available for the epidemiological study of coronary heart disease, the most valuable is electrocardiography. It is objective, it provides a permanent record, and, properly used, it provides more information about the damage to the myocardium than any other procedure. Moreover, it can be readily applied to the examination of a large number of people. The report contains a number of recommendations regarding the precautions to be observed and the type of instrument and leads that should be used. It is pointed out that, from the epidemiological point of view, the value of the electrocardiogram is enhanced if the reading is checked by several observers. It should be interpreted first without reference to the clinical data, and then in the light of specific clinical information; the clinical history may reinforce the meaning of " possible " patterns, giving them as much value as " very probable " patterns. As an aid to the interpretation, a list of electrocardiographic criteria is given in the form of an annex to the Committee's report. This shows the patterns to be expected in the various leads in " very probable " and in " possible " myocardial infarction, and also the effect of an effort test on the electrocardiogram in cases of angina pectoris. The Committee felt, however, that the value and feasibility of effort tests for field studies remains to be determined, and that the reports of field teams using these tests should be awaited before recommending any routine application.

With regard to the use of X-rays in field studies, apart from the technical, financial, and safety problems, the measurement of small increases in heart size, such as are often met in field studies, offers methodological difficulties which have not yet been solved. The question of the value of X-ray of the aorta in field studies—e.g., for measuring the aortic width or recording classifications—needs special study. The report also recommends the further investigation of other clinical methods adaptable to field

studies, pointing out that their clinical usefulness is not a sufficient recommendation for their use in epidemiological studies.

Etiology of coronary heart disease

Although recent studies have clarified the effects of the saturated and unsaturated fatty acids on the blood lipids, the significance of these findings in relation to coronary heart disease in man has not yet been established. It is therefore considered too early to make any general recommendation regarding changes in the fat composition of the diet. Moreover, other ingredients of the diet also need to be studied; and carefully controlled clinical trials of the effects of different diets on patients suffering from coronary heart disease are urgently needed. The report recommends that a special study should be made to devise methods of ascertaining individual food intake that are, at the same time, simple, reasonably reliable, and comparable, special attention being paid to foodstuffs commonly used in population groups where a low prevalence of coronary atherosclerosis has been established.

Attempts are at present being made to correlate blood-cholesterol levels with food intake on the one hand and with the frequency of coronary heart disease on the other. In view of the great importance of such studies from the point of view of possible preventive measures, the Committee considered it imperative that the methods used for blood cholesterol determinations should be standardized, reliable, and at least comparable within known limits—all the more so as wide variations in "normal" blood cholesterol levels have been found in the same adult age-groups in different countries and communities.

There is some evidence suggestive of a correlation between physical activity and the occurrence of coronary atherosclerosis and coronary heart disease, but the epidemiological studies that have been carried out so far have been concerned with different occupational groups and have not provided a direct demonstration of a relationship between physical activity and coronary heart disease. In fact, studies carried out in the United States of America have yielded results at variance with those of similar studies in the United Kingdom. Additional research is also needed on the personal characteristics that prompt people to select different occupations and how these characteristics may be related to the development of coronary heart disease.

With regard to smoking, recent evidence is contradictory, some studies having shown a marked relationship, whereas others have found no connexion. Much work has been carried out on the influence of hormones on blood lipid levels and atheroma formation, and on the possible role of hormones in the etiology of coronary heart disease, but so far no definite conclusions are possible.

The report further notes that very little work has been done on possible relationships between psychological and psychosocial factors and the occurrence of coronary heart disease.

One of the reasons for this is the difficulty of securing the co-operation of physicians, psychologists and sociologists with the necessary training and experience. The report recommends therefore that efforts should be made to stimulate such co-operation, with a view to formulating methods and principles of research in the psychological aspects of the cardiovascular diseases.

In general, the report lays great emphasis on the lack of trained and experienced epidemiologists as a major obstacle to the development of field studies on cardiovascular disease. The implementation of a broad training programme on an international basis is thus an urgent need, and the report recommends that this matter should be considered one of the first priorities.

Notes and News

Hydatid disease and the fox

Hydatid disease is widespread throughout the world, and is the source of much loss of food and of a considerable amount of infection in man. It is caused by a tapeworm, *Echinococcus*, whose natural intermediate hosts are certain domestic and wild animals, but sometimes include man. It is now held, widely but not universally, that there are two different species of *Echinococcus* : *E. granulosus*, of practically world-wide distribution, infesting the dog and related animals, its intermediate hosts herbivorous domestic and wild animals; and *E. multilocularis*, found in parts of Europe and Asia, in the islands of the Bering Sea and in Alaska, its definitive hosts not only dogs but also foxes and cats, its intermediate hosts field mice and other microtine rodents. The characteristics of the disease caused by each are different, the alveolar type, caused by *E. multilocularis*, being much more dangerous.

The literature on the role of the fox as a host of *Echinococcus* has been recently reviewed (*Bull. Wld Hlth Org.*, 1959, **20**, 87). In most countries the tapeworm in foxes has been found not to be *E. granulosus*, but several cases of infestation with this tapeworm have been reported in Great Britain. In the nineteenth century, the European red fox was imported into Australia, the sheep breeding areas of which are now much affected by hydatid disease. M. A. Gemmell, author of the review, carried out an experimental infestation of 16 of these foxes with the Australian strain of *E. granulosus* in order to determine their status as definitive hosts. A few tapeworms became established in some of the foxes, but they were retarded in growth and failed to reach sexual maturity even as long as 112 days after infestation. By comparison, the tapeworms proliferated in the dogs used as controls, and rapidly reached maturity. The conclusion reached was that the fox is not a definitive host of *E. granulosus*.

What then of the cases reported from Great Britain ? They may have been cases of infestation by *E. granulosus*, but if so they were, to the knowledge of the author of the article, the only reported cases of gravid *E. granulosus* in the fox. They may, on the other hand, have been cases of *E. multilocularis*.

Isolated cases of alveolar hydatid disease have been reported outside the known endemic areas, and have been used as an argument by protagonists of the view that there are not two species of *Echinococcus*, but only one. But *E. multilocularis* has been found outside the endemic areas, in either the intermediate or definitive host or both, and its presence explains the occurrence of all but two of the sporadic cases.

These two cases were recorded in Tasmania and New Zealand, where there are no foxes and where the usual intermediate hosts of *E. multilocularis* have not been found. How can they be accounted for on the assumption that there are two kinds of *Echinococcus* ? One possible answer is that, in each instance, the infestation was carried in a dog, and the parasite, having failed to find suitable intermediate hosts, has died out: this would explain also why there have been no more cases. Another possible answer is that the cycle of transmission is maintained at a low level in some intermediate host, as yet undiscovered. The author of the article believes that there can be no reasonable doubt about the existence of the two species of *Echinococcus*, and he puts forward the hypothesis that the cases in Tasmania and New Zealand are not cases of true alveolar disease, but of a transitional form between ordinary and alveolar hydatid disease: in other words, atypical or pseudo-alveolar cases, arising from the known pleomorphism of *E. granulosus* in its cystic stage.

Vector-parasite relationships in bilharziasis

The results of laboratory experiments on the susceptibility of snail vectors in Ghana to local strains of *Schistosoma haematobium* have recently been reported by Dr F. S. McCullough, of the WHO Regional Office for Africa (*Bull. Wld Hlth Org.*, 1959, **20**, 75). He found that a definite vector-parasite compatibility or incompatibility existed; in other words, that the different strains of the parasite were virtually specific in their ability to develop in one or other vector.

This finding may provide a key to some of the unexplained observations of other research workers in Africa. It may explain why some species of snails have been found to be heavily infected in Nigeria, whereas others in the area, elsewhere hosts to the same parasite, were totally uninfected. It may explain why attempts to infect this or that snail have been here a success, there a failure. It may explain why bilharziasis is a serious disease in Egypt, a mild disease in British West Africa.

The key is by no means a universal one, as Dr McCullough points out: a South African snail, for example, has been found to be susceptible to an Egyptian strain of *S. haematobium*. The inter-relationship between snails and parasite strains is thus probably extremely complex, depending not only on morphological and biological variation in the snails but also on the existence of parasite strains of varying degrees of compatibility. Dr McCullough concludes that similar experiments, performed elsewhere, may lead to the accumulation of knowledge on vector-parasite relationships throughout Africa, and so to a more comprehensive picture of the situation.

Protection against radiations

The report has now been published of a course on the protection of human beings against ionizing radiations, which was held at Saclay, France, by the Paris School of Public Health and the WHO Regional Office for Europe.[1] It contains the texts of the 43 lectures of the course, some reproduced in full and some in summarized form. In an introduction, Professor L. Bugnard states: "... protection is not automatically effective; it depends upon the co-operation of all concerned and, above all, on exact knowledge of the dangers and means of protection. It is essential that this knowledge should not remain the exclusive property of a few technicians: it must be widely spread and in particular it must be made available to all those who have any administrative authority in regard to the organization of public health and the organization of labour." It is, in fact, to such persons that the report is addressed.

The programme of the course was divided into three parts: an introduction concerned with explaining the elements of nuclear physics (origin and nature of rays, ionizing power, absorption and measurement); a part dealing with radiobiology (action on cells, tissues and the organism as a whole, somatic effects and genetic effects); and a part dealing with protection proper (assessment of occupational hazards and hazards for the general public, security standards, means of protection, general organization of individual and collective security).

Malaria and *Aëdes aegypti* eradication in Cuba

Campaigns for the eradication of malaria and urban yellow fever were undertaken by the Cuban Government at the end of February, in co-operation with the Pan American Health Organization (PAHO), which acts as the regional organization of WHO in the Western Hemisphere. PAHO has agreed to contribute supplies and equipment to the malaria eradication campaign. A PAHO malariologist and a sanitarian will shortly go to Cuba to help with the preparatory phase; they will be joined by other PAHO personnel as operations get under way. With the initiation of the campaign in Cuba, all the nations of the Americas where malaria still exists are now committed to its eradication.

While a programme for the eradication of *Aëdes aegypti*—the urban vector of yellow

[1] Centre d'études nucléaires de Saclay (1958) *Protection contre les radiations ionisantes*, Paris, Pergamon Press France, xiii + 435 pages

fever—has been in operation in Cuba since 1953, it has hitherto been on a small scale, owing to lack of funds. Under the new agreement with PAHO, it will be greatly expanded. PAHO *A. aegypti* experts are already at work in Cuba, and the Organization has undertaken to provide additional equipment and insecticide.

Domiciliary and ambulatory medical care

Hospital services are becoming more and more expensive with the result that governments, social insurance institutions and individuals are finding the cost of hospitalization increasingly difficult to cover. There is thus a tendency for ambulatory and domiciliary medical care to take the place of hospital care. Another reason for this tendency is a growing awareness of the emotional difficulties caused by the uprooting of individuals—particularly children and old people—from their families.

The WHO Expert Committee on Organization of Medical Care met in Geneva, from 16 to 21 March, to discuss the role of hospitals in ambulatory and domiciliary medical care, the term " medical care " being used in the sense of comprehensive preventive and curative medical services to the individual rather than simply the treatment of illness. The Committee considered the participation of health centres, polyclinics, out-patient departments of general hospitals, industrial medical services, rehabilitation centres, etc. in programmes of ambulatory and domiciliary medical service to a community, as well as the role of the general practitioner in this field. The problem of co-ordination of activities, both at the local level and that of central administration, was also examined.

A review of the Committee's work will appear in the Chronicle when its report is published.

World Health Day 1959

World Health Day, observed each year on 7 April, marks the anniversary of the coming into force of the Constitution of the World Health Organization in 1948. This year's theme was " Mental Illness and Mental Health in the World of Today ". The occasion was used by national and local health services to stimulate popular interest in this subject, which, although of vital and growing concern to countries at all stages of economic development, is little understood by the public generally.

In a message issued in connexion with this year's observance, Dr. M. G. Candau, Director-General of WHO, stated:

" *After centuries when mentally sick people were regarded simply as ' lunatics ', creatures irrevocably cut off from their fellows who had to be locked up in institutions or even chained in prisons, society is slowly losing its horror of mental disease and is coming to regard it as curable like any other sickness. Psychiatry is now accepted by the public on a par with other major branches of medicine, and gone are the days when the mental asylum's main purpose was to ' protect society ' by keeping patients indiscriminately shut away where they could do no harm.*

" *If treatment is begun early enough, between 70% and 80% of mental patients can nowadays be restored to a useful place in society. In some countries the average hospitalization time for patients who go away cured is less than six months.*

" *... Parallel with these advances, new knowledge has been gained about those physical ailments which are to some extent caused by psychological factors, and also about certain kinds of unsocial behaviour that are now recognized as manifestations of mental ill-health.*

" *The old, hopeless belief that mental disease is wholly predetermined by heredity and therefore inescapable has given way before the evidence that environment may also play an important part, particularly in early childhood. This permits a more optimistic view, and underlines the truth that closely knit family ties and a stable social structure are the best safeguards against the later development of mental health troubles.*"

People and Places

Production of BCG vaccine

A tour of inspection of approved laboratories producing BCG vaccine is being carried out in the Western Pacific Region by a WHO consultant, Dr O. Sievers. He will visit laboratories in Manila, Saigon and Taipeh, providing any technical advice that may be required.

A graduate of the Medical Faculty of the University of Helsinki, Dr Sievers is Chief of the Bacteriological Laboratory at Sahlgren's Hospital, Göteborg, Sweden. He is well known internationally for his work on BCG vaccine.

Teaching of physiology in Fiji

With WHO assistance, the Central Medical School in Suva, Fiji, has for the past four years been strengthening its staff and developing the training of assistant medical and dental officers for government service in Fiji and adjacent territories. Dr Jen-Jo Huang, who has been appointed WHO visiting lecturer in physiology at the school, comes to this post from the National Institutes of Health, Bethesda, Md., USA, where he was visiting scientist assigned to the Clinical Pathology Department as Acting Chief of the Microbiology Service. He has also served for two years as medical officer in the WHO Tuberculosis Research Office in Copenhagen.

WHO lecturer for Cambodian medical school

Since 1953, WHO has been helping the Royal School of Medicine in Phnom-Penh, Cambodia, to improve its teaching standards and to extend its facilities for the training of hospital assistants. Dr R. A. des Nouettes, of France, who was recently appointed WHO lecturer in physiology at the school, received his medical training at the University of Lyons. Before his present appointment he was Assistant in the Physiology Laboratory, Medical Faculty of the University of Paris.

Public health nursing in Singapore

Last year, WHO helped to organize a course in public health nursing at the Institute of Health, University of Malaya, Singapore. The curriculum was drawn up under the guidance of a Joint Board of Public Health Nursing Studies, consisting of members from the University of Malaya, the Government and the City Council, and the syllabus and examination received recognition from the Royal Society of Health in England. The course is now being extended to cover district nursing.

Miss Dorothy Goodwin, who has been appointed WHO nurse educator at the Institute, obtained her certificate in midwifery training from Birmingham Maternity Hospital, and her health visitor tutor's certificate from the Royal College of Nursing, London. After holding district nursing appointments in London and Cornwall, Miss Goodwin spent four years at the School of Nursing, University College Hospital, Ibadan, Nigeria, where she introduced public health nursing into the basic curriculum.

Maternal and child health in Ceylon

The WHO-assisted rural health development project at Kalutara, Ceylon, is primarily concerned with the improvement of child care services, both at the Kalutara Health Unit Hospital and in the field. Dr Ida J. van Dijk, of the Netherlands, has been appointed Medical Officer in Maternal and Child Health to the project for a period of two years. Educated at the University of Amsterdam and the Netherlands Institute of Preventive Medicine in Leiden, Dr van Dijk worked as a paediatrician in the general hospital and the infants' and children's clinics at Semarang, Indonesia, from 1955 to 1958.

Appointments in the Eastern Mediterranean Region

Dr Rushdi Jabi, of the United Arab Republic, has been appointed WHO public health adviser to the Health Auxiliaries' and Sanitarians' Institute at Riad, Saudi Arabia. A graduate of the American University, Beirut, Dr Jabi subsequently took postgraduate courses in obstetrics, gynaecology and maternal and child health at a Paris hospital. He has served as Under-Secretary of State, Ministry of Health, Syria, and Professor of Public Health, American University, Beirut.

A WHO-assisted malaria eradication programme will be undertaken in the United Arab Republic (Province of Egypt) following a pre-eradication survey which should be completed shortly. Dr George D. Georgopoulos, of Greece, who has been appointed malariologist to the programme, has had almost thirty years' experience of malaria control and was, until recently, malaria consultant to the Pan American Sanitary Bureau, which serves as the WHO Regional Office for the Americas.

With assistance from WHO and UNICEF, a centre to provide rapid training for auxiliary health personnel was set up at Gondar, Ethiopia, in 1954. It is now attended by more than 100 students and has, to date, trained 49 health assistants, 28 community nurse-midwives, and 32 sanitarians. Dr Wen-Pin Chang, of China, who recently joined the teaching staff of the Centre, is a former Professor of the National Taiwan University. He is a graduate of the

Chang-Chun Medical College, China, and has carried out post-graduate public health studies in Japan and the United States.

Headquarters appointment

Dr Henry Makower, of Poland, was recently appointed to the staff of the Division of Communicable Diseases at WHO Headquarters, where he will assist in the expansion of the Organization's programmes concerning virus diseases. Prior to his appointment with WHO, Dr Makower was Chief of the Virological Department of the Ludwik Hirzfeld Institute for Immunology and Experimental Therapy in Wroclaw, and Associate Professor in the Wroclaw Medical School.

Review of WHO Publications

The Work of WHO, 1958 : Annual Report of the Director-General to the World Health Assembly and to the United Nations (*Off. Rec. Wld Hlth Org.*, No. 90), Geneva, x+252 pages, illustrated. Price: 10/-, $2.00, or Sw. fr. 6.—. Published in English, French and Spanish.

The year 1958, marking the tenth anniversary of WHO's establishment as a fully fledged specialized agency of the United Nations, provided an opportunity for a reassessment of the Organization's achievements, methods and aims.

In the introduction to his report on the work of WHO in 1958, Dr M. G. Candau, Director-General, states that, while the remarkable advances in health which started ten years ago still continue, many of the original handicaps nevertheless remain: administrative delays, shortage of trained and even semi-trained personnel, inadequate environmental sanitation, undeveloped health statistics services, etc. Thus any evaluation of the progress made in 1958—or in the preceding years—must take into account the tasks still to be fulfilled.

Dr Candau illustrates this statement by a brief review of some of the principal regional activities covered by the report, emphasizing in particular the problem of environmental sanitation, which affects not only the so-called under-developed countries, but the world as a whole, and on which important decisions will be taken this year by the Twelfth World Health Assembly.

As in previous years, the report is in four sections, covering general activities, work in the regions, co-operation with other organizations, and WHO-assisted projects. There are sixteen pages of photographs showing the work of WHO in various parts of the world.

INFLUENZA

Summary report on the Asian influenza epidemic in Japan, 1957—*Hideo Fukumi*

The 1957 pandemic of influenza in India—*I. G. K. Menon*

The epidemic of Asian influenza in Poland, 1957—*Felix Przesmycki, Leon Sawicki, Halina Dobrowolska, Anna Grzelakowa, Jerzy Zański, Miroslaw Stasik, Stanislaw Kulesza, Krystyna Zgorzelska & Świetlana Cieplińska*

La grippe dans la population africaine de Brazzaville—*R. Depoux, J. Orio, C. Chippaux & P. Merveille*

Quelques particularités cliniques et sérologiques de la grippe en 1957/58 chez des enfants—*V. M. Jdanov & V. V. Ritova*

Results of further research on influenza in the USSR: with special reference to the 1957 pandemic—*V. M. Zhdanov*

The effect of a previous attack of A1 influenza on susceptibility to A2 virus during the 1957 outbreak—*A. N. Slepushkin*

Epidemiology of influenza in Poland, 1947-57—*Felix Przesmycki, Halina Dobrowolska & Leon Sawicki*

Report on the first two years of the Czechoslovak Influenza Centre—*K. Raška, B. Tůmová, J. Pečenka & J. Radkovský*

Vaccination against influenza in Poland, 1953-56—*Felix Przesmycki, Leon Sawicki & Halina Dobrowolska*

Human vaccination experiments with Asian influenza vaccine in Japan—*Hideo Fukumi*

Serological and prophylactic trials of Asian influenza vaccines in Sweden—*Leo Heller, Bengt Körlof, Jan Mörner & Bo Zetterberg*

Experience with influenza vaccination in Iceland, 1957—*Júlíus Sigurjónsson, Björn Sigurdsson & Halldór Grímsson*

Methods and procedures for use of complement-fixation technique in type- and strain-specific diagnosis of influenza—*Florence S. Lief & Werner Henle*

Studies on the P-Q phases of A/Asia/57 influenza viruses—*Hideo Fukumi*

Some new or little-known respiratory viruses—*C. H. Andrewes & Grizelda Worthington*

Properties of influenza viruses A/Asia/57 and A-equi/Praha/56—*B. Tůmová & O. Fišerová-Sovinová*

Studies in swine of Asian influenza virus—*Gordon D. Wallace & R. E. Kissling*

Serological survey in animals for type A influenza in relation to the 1957 pandemic—*Martin M. Kaplan & A. M.-M. Payne*

Notes

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